INTERMEDIATE FRACTIONS

T·A·I Mathematics
Team Accelerated Instruction

INTERMEDIATE FRACTIONS
TAI – Team Accelerated Instruction

STUDENT BOOK

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Acknowledgments

CONTENTS

REVIEW: INTRODUCTION TO FRACTIONS

GUIDEPAGE

GOAL: To review fraction problems like:

1)

2) $\dfrac{3}{8}$ $\square$ $\dfrac{3}{4}$

3) $\dfrac{7}{13}$
$+\dfrac{5}{13}$

4) $\dfrac{5}{11}$
$-\dfrac{3}{11}$
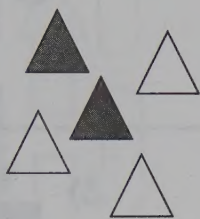
SKILL PRACTICE 1

DIRECTIONS: Write a fraction to show how much is shaded.

Example:
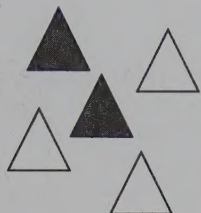
Think:

2 parts shaded.
5 parts altogether.

The fraction is:

$$\frac{2}{5}$$

1)

2)

3)

4)

5)

6)

7)

8)

9)

10)

11)

12)

13)

14)

15)

16)
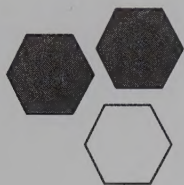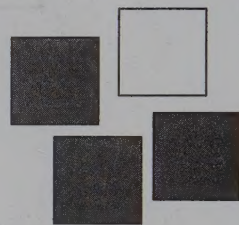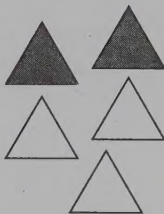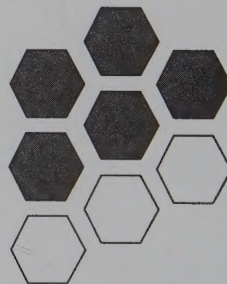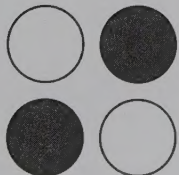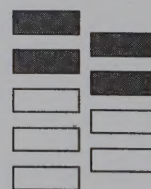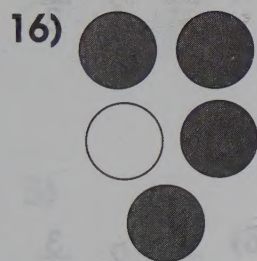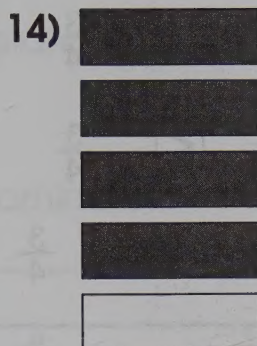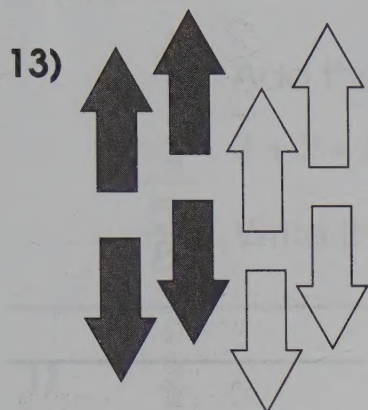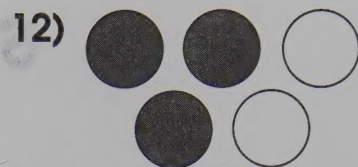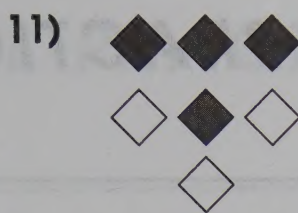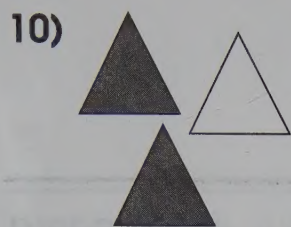
SKILL PRACTICE 2

DIRECTIONS: Write **>** or **<**.

Example:

$\frac{3}{8}$? $\frac{3}{4}$
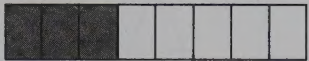
$\frac{3}{8}$ **<** $\frac{3}{4}$

$\frac{3}{8}$ is less than $\frac{3}{4}$

1) $\frac{2}{8}$? $\frac{2}{5}$

2) $\frac{1}{2}$? $\frac{1}{3}$

3) $\frac{4}{7}$? $\frac{4}{8}$

4) $\frac{2}{9}$? $\frac{2}{3}$

5) $\frac{1}{9}$? $\frac{1}{3}$

6) $\frac{7}{8}$? $\frac{7}{10}$

7) $\frac{8}{9}$? $\frac{8}{10}$

8) $\frac{3}{5}$? $\frac{3}{8}$

9) $\frac{2}{3}$? $\frac{2}{4}$

10) $\frac{1}{8}$? $\frac{1}{9}$

11) $\frac{3}{10}$? $\frac{3}{4}$

12) $\frac{1}{4}$? $\frac{1}{3}$

13) $\frac{2}{5}$? $\frac{2}{6}$

14) $\frac{3}{6}$? $\frac{3}{5}$

15) $\frac{2}{7}$? $\frac{2}{10}$

16) $\frac{7}{9}$? $\frac{7}{8}$

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SKILL PRACTICE 3

DIRECTIONS: Add or subtract.

Examples: The denominators are the same.

$\frac{3}{8}$ Add the numerators.

$+\frac{2}{8}$ 3 + 2 = **5**

$\frac{5}{8}$ Write the denominator.

$\frac{3}{5}$ Subtract the numerators.

$-\frac{2}{5}$ 3 − 2 = **1**

$\frac{1}{5}$ Write the denominator.

1) $\frac{3}{8}$
    $+\frac{4}{8}$

2) $\frac{4}{6}$
    $-\frac{1}{6}$

3) $\frac{4}{6}$
    $+\frac{1}{6}$

4) $\frac{2}{7}$
    $-\frac{1}{7}$

5) $\frac{1}{5}$
    $+\frac{2}{5}$

6) $\frac{4}{5}$
    $-\frac{2}{5}$

7) $\frac{5}{9}$
    $+\frac{1}{9}$

8) $\frac{3}{4}$
    $-\frac{1}{4}$

9) $\frac{5}{9}$
    $+\frac{3}{9}$

10) $\frac{4}{7}$
    $-\frac{2}{7}$

11) $\frac{3}{10}$
    $+\frac{4}{10}$

12) $\frac{5}{8}$
    $-\frac{1}{8}$

13) $\frac{2}{3}$
    $+\frac{1}{3}$

14) $\frac{10}{12}$
    $-\frac{3}{12}$

15) $\frac{2}{5}$
    $+\frac{2}{5}$

16) $\frac{5}{6}$
    $-\frac{3}{6}$

FORMATIVE TEST

A. Write a fraction or mixed number to show how much is shaded.

1)

2)
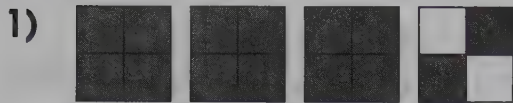
Write **>** or **<**.

3) $\frac{1}{7}$? $\frac{3}{6}$

4) $\frac{1}{6}$? $\frac{2}{5}$

5) $\frac{3}{4}$? $\frac{3}{5}$

6) $\frac{4}{6}$? $\frac{4}{5}$

Add

7) $\frac{3}{15} + \frac{10}{15} =$

8) $6\frac{5}{60}$
$+ \frac{12}{60}$

Subtract

9) $12\frac{12}{15}$
$- 2\frac{8}{15}$

10) $9\frac{27}{30}$
$- \frac{25}{30}$

B. Write a fraction or mixed number to show how much is shaded.

1)

2)

Write **>** or **<**.

3) $\frac{2}{3}$? $\frac{2}{4}$

4) $\frac{1}{8}$? $\frac{1}{6}$

5) $\frac{7}{9}$? $\frac{7}{8}$

6) $\frac{5}{10}$? $\frac{5}{8}$

Add

7) $\frac{20}{50} + \frac{11}{50} =$

8) $2\frac{3}{15}$
$+ \frac{10}{15}$

Subtract

9) $14\frac{7}{8}$
$- \frac{6}{8}$

10) $3\frac{8}{16}$
$- 2\frac{2}{16}$

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UNIT 1: EQUIVALENT FRACTIONS

GUIDEPAGE

GOAL: To learn to find equivalent fractions.

HERE IS HOW TO FIND EQUIVALENT FRACTIONS.

Multiply by 1.

Here are some other names for 1.

$\frac{2}{2}$ $\frac{3}{3}$ $\frac{4}{4}$
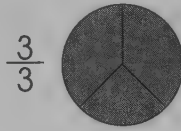
Each of these is 1.

Example: How many eighths in $\frac{1}{4}$?

$$\frac{1}{4} = \frac{?}{8}$$

Think: Use the denominators. $4 \times \underline{\textbf{2}} = 8$

Multiply by $1 = \frac{2}{2}$ $\frac{1}{4} \times \frac{2}{2} = \frac{2}{8}$

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SKILL PRACTICE 1

DIRECTIONS: Complete the sentence.

Example:

$$\frac{3}{4} = \frac{?}{8}$$
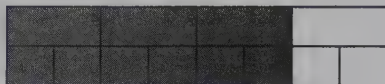
$$\frac{3}{4}$$

$$\frac{6}{8}$$

$$\frac{3}{4} = \frac{6}{8}$$

---

1) $\frac{2}{5} = \frac{?}{10}$

2) $\frac{1}{2} = \frac{?}{6}$

3) $\frac{2}{2} = \frac{?}{4}$

4) $\frac{2}{3} = \frac{?}{9}$

5) $\frac{2}{2} = \frac{?}{3}$
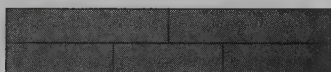
6) $\frac{2}{3} = \frac{?}{6}$
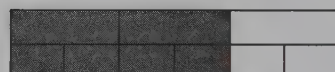
7) $\frac{3}{4} = \frac{?}{8}$
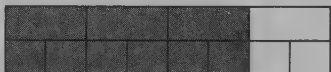
8) $\frac{4}{5} = \frac{?}{10}$

9) $\frac{1}{2} = \frac{?}{8}$

10) $\frac{5}{5} = \frac{?}{10}$

11) $\frac{1}{3} = \frac{?}{9}$
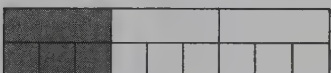
12) $\frac{3}{5} = \frac{?}{10}$

13) $\frac{2}{3} = \frac{?}{6}$
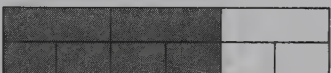
14) $\frac{1}{3} = \frac{?}{6}$

15) $\frac{3}{3} = \frac{?}{9}$

16) $\frac{1}{5} = \frac{?}{10}$

8
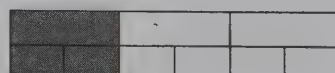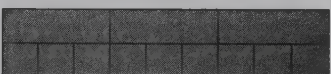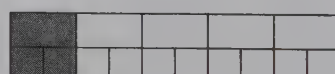
SKILL PRACTICE 2

DIRECTIONS: Multiply by the number given to find an equivalent fraction.

Example:

$$\frac{3}{4} \times \frac{2}{2} = \frac{6}{8}$$

1) $\frac{4}{5} \times \frac{2}{2} =$

2) $\frac{1}{4} \times \frac{3}{3} =$

3) $\frac{3}{6} \times \frac{4}{4} =$

4) $\frac{2}{3} \times \frac{5}{5} =$

5) $\frac{1}{2} \times \frac{4}{4} =$

6) $\frac{1}{6} \times \frac{6}{6} =$

7) $\frac{4}{6} \times \frac{2}{2} =$

8) $\frac{1}{5} \times \frac{3}{3} =$

9) $\frac{1}{3} \times \frac{5}{5} =$

10) $\frac{1}{2} \times \frac{7}{7} =$

11) $\frac{1}{4} \times \frac{6}{6} =$

12) $\frac{2}{3} \times \frac{2}{2} =$

13) $\frac{3}{4} \times \frac{3}{3} =$

14) $\frac{1}{6} \times \frac{4}{4} =$

15) $\frac{1}{7} \times \frac{5}{5} =$

16) $\frac{2}{5} \times \frac{6}{6} =$

SKILL PRACTICE 3

DIRECTIONS: Write another name for one that will make the sentence true.

Example:

$$\frac{4}{5} \times \frac{?}{?} = \frac{8}{10}$$

Think: $4 \times \mathbf{2} = 8$
$5 \times \mathbf{2} = 10$

$$\frac{4}{5} \times \frac{\mathbf{2}}{\mathbf{2}} = \frac{8}{10}$$

---

1) $\frac{1}{3} \times \frac{?}{?} = \frac{2}{6}$

2) $\frac{2}{5} \times \frac{?}{?} = \frac{10}{25}$

3) $\frac{3}{4} \times \frac{?}{?} = \frac{12}{16}$

4) $\frac{5}{8} \times \frac{?}{?} = \frac{15}{24}$

5) $\frac{5}{6} \times \frac{?}{?} = \frac{15}{18}$

6) $\frac{2}{3} \times \frac{?}{?} = \frac{8}{12}$

7) $\frac{2}{4} \times \frac{?}{?} = \frac{12}{24}$

8) $\frac{4}{5} \times \frac{?}{?} = \frac{8}{10}$

9) $\frac{7}{10} \times \frac{?}{?} = \frac{21}{30}$

10) $\frac{3}{7} \times \frac{?}{?} = \frac{12}{28}$

11) $\frac{4}{9} \times \frac{?}{?} = \frac{8}{18}$

12) $\frac{1}{4} \times \frac{?}{?} = \frac{5}{20}$

13) $\frac{3}{5} \times \frac{?}{?} = \frac{9}{15}$

14) $\frac{1}{8} \times \frac{?}{?} = \frac{4}{32}$

15) $\frac{5}{7} \times \frac{?}{?} = \frac{10}{14}$

16) $\frac{2}{3} \times \frac{?}{?} = \frac{10}{15}$

SKILL PRACTICE 4

DIRECTIONS: Find the equivalent fractions.

Example:

Think: Look at the denominators.

$4 \times \underline{?} = 8$

$4 \times \mathbf{2} = 8$

Multiply by $\dfrac{\mathbf{2}}{\mathbf{2}}$

$\dfrac{3}{4} = \dfrac{?}{8}$

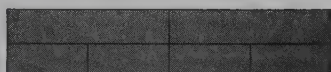$\dfrac{3}{4} \times \dfrac{2}{2} = \dfrac{6}{8}$

1) $\dfrac{2}{3} = \dfrac{?}{9}$

2) $\dfrac{1}{4} = \dfrac{?}{16}$

3) $\dfrac{1}{5} = \dfrac{?}{10}$

4) $\dfrac{3}{4} = \dfrac{?}{20}$

5) $\dfrac{1}{6} = \dfrac{?}{12}$

6) $\dfrac{3}{5} = \dfrac{?}{15}$

7) $\dfrac{2}{3} = \dfrac{?}{12}$

8) $\dfrac{1}{7} = \dfrac{?}{21}$

9) $\dfrac{1}{3} = \dfrac{?}{18}$

10) $\dfrac{5}{6} = \dfrac{?}{12}$

11) $\dfrac{3}{6} = \dfrac{?}{18}$

12) $\dfrac{1}{4} = \dfrac{?}{16}$

13) $\dfrac{1}{3} = \dfrac{?}{6}$

14) $\dfrac{2}{4} = \dfrac{?}{12}$

15) $\dfrac{2}{5} = \dfrac{?}{25}$

16) $\dfrac{1}{2} = \dfrac{?}{12}$

11

FORMATIVE TEST

A. Find the equivalent fractions.

1) $\dfrac{1}{4} = \dfrac{?}{16}$

2) $\dfrac{2}{5} = \dfrac{?}{15}$

3) $\dfrac{4}{7} = \dfrac{?}{14}$

4) $\dfrac{2}{4} = \dfrac{?}{20}$

5) $\dfrac{2}{3} = \dfrac{?}{18}$

6) $\dfrac{3}{8} = \dfrac{?}{24}$

7) $\dfrac{3}{4} = \dfrac{?}{20}$

8) $\dfrac{4}{6} = \dfrac{?}{12}$

9) $\dfrac{1}{3} = \dfrac{?}{15}$

10) $\dfrac{1}{2} = \dfrac{?}{8}$

B. Find the equivalent fractions.

1) $\dfrac{1}{3} = \dfrac{?}{9}$

2) $\dfrac{7}{8} = \dfrac{?}{16}$

3) $\dfrac{2}{6} = \dfrac{?}{24}$

4) $\dfrac{3}{7} = \dfrac{?}{21}$

5) $\dfrac{4}{5} = \dfrac{?}{30}$

6) $\dfrac{3}{4} = \dfrac{?}{8}$

7) $\dfrac{4}{6} = \dfrac{?}{30}$

8) $\dfrac{2}{5} = \dfrac{?}{20}$

9) $\dfrac{1}{4} = \dfrac{?}{12}$

10) $\dfrac{1}{7} = \dfrac{?}{14}$

UNIT 2: FACTORS

GUIDEPAGE

GOAL: To learn to do problems like

List the factors of 12.

STEP 1. WRITE ALL OF THE MULTIPLICATION FACTORS
         WITH A PRODUCT OF 12

> **Think:** Do not repeat facts.   1 x 12
>   6 x 2 is the same as 2 x 6.
>   2 x 6
>
>   3 x 4

STEP 2. LIST THE FACTORS IN ORDER, SMALLEST FIRST.

> **Think:** The factors of 12 are
>   **1, 2, 3, 4, 6, 12**

REMEMBER

The factors of a number are all numbers that can be
multiplied together to make that number.

SKILL PRACTICE 1

DIRECTIONS: Write the missing factor.

Example:

>   ***Think:*** What number x 4 = 12? $\underline{3}$ x 4 = 12
>   ***Write:*** **3**

1) __ x 8 = 8   2) __ x 6 = 18   3) __ x 3 = 24   4) __ x 5 = 20

5) __ x 7 = 42   6) __ x 3 = 6   7) __ x 1 = 5   8) __ x 4 = 36

9) __ x 2 = 14   10) __ x 6 = 48   11) __ x 9 = 63   12) __ x 4 = 12

13) __ x 5 = 10   14) __ x 5 = 25   15) __ x 9 = 54   16) __ x 7 = 7

SKILL PRACTICE 2

DIRECTIONS: Write all of the possible factors for each number.
Do not repeat factors.

Examples:

10
$$\underline{1} \times \underline{10}$$
$$\underline{2} \times \underline{5}$$

7
$$\underline{1} \times \underline{7}$$

1) 12
__ x __
__ x __
__ x __

2) 11
__ x __

3) 18
__ x __
__ x __
__ x __

4) 9
__ x __
__ x __

5) 8
__ x __
__ x __

6) 24
__ x __
__ x __
__ x __
__ x __

7) 15
__ x __
__ x __

8) 21
__ x __
__ x __

9) 36
__ x __
__ x __
__ x __
__ x __
__ x __

10) 17
__ x __

11) 16
__ x __
__ x __
__ x __

12) 6
__ x __
__ x __

13) 28
__ x __
__ x __
__ x __

14) 14
__ x __
__ x __

15) 22
__ x __
__ x __

16) 33
__ x __
__ x __

SKILL PRACTICE 3

DIRECTIONS: In these problems, the factors are already written.
Write a list of the factors in order from smallest to largest.

Examples:

10
1 x 10
2 x 5
Factors: **1, 2, 5, 10**

7
1 x 7
Factors: **1, 7**

1)   12
1 x 12
2 x 6
3 x 4
Factors:

2)   11
1 x 11
Factors:

3)   18
1 x 18
2 x 9
3 x 6
Factors:

4)   9
1 x 9
3 x 3
Factors:

5)   8
1 x 8
2 x 4
Factors:

6)   24
1 x 24
2 x 12
3 x 8
4 x 6
Factors:

7)   15
1 x 15
3 x 5
Factors:

8)   21
1 x 21
3 x 7
Factors:

9)   36
1 x 36
2 x 18
3 x 12
4 x 9
6 x 6
Factors:

10)   17
1 x 17
Factors:

11)   16
1 x 16
2 x 8
4 x 4
Factors:

12)   6
1 x 6
2 x 3
Factors:

13)   28
1 x 28
2 x 14
4 x 7
Factors:

14)   14
1 x 14
2 x 7
Factors:

15)   22
1 x 22
2 x 11
Factors:

16)   33
1 x 33
3 x 11
Factors:

SKILL PRACTICE 4

DIRECTIONS: List the factors for each number in order.

Example:

    Think: The factors of 21 are 1 x 21   21
              and 3 x 7.

                                          Factors: **1, 3, 7, 21**

1) 14   **2)** 36   **3)** 12   **4)** 5

5) 9   **6)** 20   **7)** 11   **8)** 18

9) 30   **10)** 8   **11)** 17   **12)** 15

13) 24   **14)** 10   **15)** 13   **16)** 22

FORMATIVE TEST

A. List the factors for each number in order.

1) 16

2) 21

3) 8

4) 36

5) 11

6) 29

7) 35

8) 18

9) 17

10) 25

B. List the factors for each number in order.

1) 14

2) 12

3) 27

4) 13

5) 32

6) 15

7) 23

8) 26

9) 19

10) 24

UNIT 3: GREATEST COMMON FACTOR

GUIDEPAGE

GOAL: To learn to do problems like

What is the greatest common factor of 10 and 25?

STEP 1.   LIST THE FACTORS OF BOTH NUMBERS IN ORDER.

Think: These are all
the factors.

10   <u>1</u> <u>2</u> <u>5</u> <u>10</u>
25   <u>1</u> <u>5</u> <u>25</u>

STEP 2.   CIRCLE THE FACTORS THAT BOTH NUMBERS HAVE.

Think: These are called
common factors.

10   (1)   <u>2</u>   (5)   <u>10</u>
25   (1)   (5)   <u>25</u>

STEP 3.   CHOOSE THE GREATEST OR LARGEST COMMON FACTOR.

10   (1)   <u>2</u>   (5)   <u>10</u>
25   (1)   (5)   <u>25</u>

Think: 5 is larger than 1.

5 is the greatest common factor of 10 and 25.

SKILL PRACTICE 1

DIRECTIONS: List the factors in order.

Example:

20   1, 2, 4, 5, 10, 20

1) 18

2) 4

3) 24

4) 15

5) 23

6) 28

7) 14

8) 36

9) 12

10) 26

11) 9

12) 21

13) 10

14) 30

15) 19

16) 16

SKILL PRACTICE 2

DIRECTIONS: Write the factors for each number.
Circle the common factors.

Example:

8   ①,②,④, 8

12   ①,②, 3,④, 6, 12
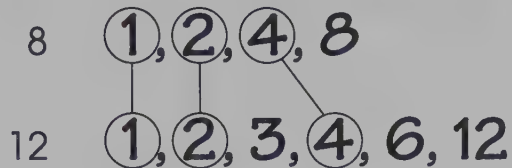
1)   15
  25

2)   33
  22

3)   36
  13

4)   6
  12

5)   18
  27

6)   21
  14

7)   24
  27

8)   12
  8

9)   28
  35

10)   20
  30

11)   36
  32

12)   28
  32

13)   18
  30

14)   10
  24

15)   30
  21

16)   16
  40

SKILL PRACTICE 3

DIRECTIONS: Find the Greatest Common Factor (GCF).

Example:

8   ①   ②   ④   8
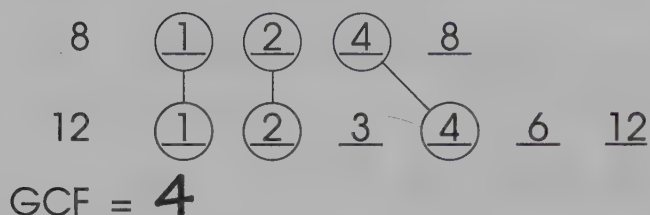
12   ①   ②   3   ④   6   12

GCF = **4**

Think: The Greatest Common Factor is **4**, because 4 is the largest number that is a factor of both 8 and 12.

---

1)   10   1   2   5   10   ___   ___   ___   ___   ___
        25   1   5   25   ___   ___   ___   ___   ___   ___
        GCF =

2)   66   1   2   3   6   11   22   33   66   ___
        22   1   2   11   22   ___   ___   ___   ___   ___
        GCF =

3)   39   1   3   13   39   ___   ___   ___   ___   ___
        52   1   2   4   13   26   52   ___   ___   ___
        GCF =

4)   6   1   2   3   6   ___   ___   ___   ___   ___
        12   1   2   3   4   6   12   ___   ___   ___
        GCF =

5) 45   <u>1</u>   <u>3</u>   <u>5</u>   <u>9</u>   <u>15</u>   <u>45</u>   ___   ___   ___

     27   <u>1</u>   <u>3</u>   <u>9</u>   <u>27</u>   ___   ___   ___   ___   ___

     GCF =

6) 50   <u>1</u>   <u>2</u>   <u>5</u>   <u>10</u>   <u>25</u>   <u>50</u>   ___   ___   ___

     65   <u>1</u>   <u>5</u>   <u>13</u>   <u>65</u>   ___   ___   ___   ___   ___

     GCF =

7) 62   <u>1</u>   <u>2</u>   <u>31</u>   <u>62</u>   ___   ___   ___   ___   ___

     93   <u>1</u>   <u>3</u>   <u>31</u>   <u>93</u>   ___   ___   ___   ___   ___

     GCF =

8) 36   <u>1</u>   <u>2</u>   <u>3</u>   <u>4</u>   <u>6</u>   <u>9</u>   <u>12</u>   <u>18</u>   <u>36</u>

     24   <u>1</u>   <u>2</u>   <u>3</u>   <u>4</u>   <u>6</u>   <u>8</u>   <u>12</u>   <u>24</u>   ___

     GCF =

9) 21   <u>1</u>   <u>3</u>   <u>7</u>   <u>21</u>   ___   ___   ___   ___   ___

     63   <u>1</u>   <u>3</u>   <u>7</u>   <u>9</u>   <u>21</u>   <u>63</u>   ___   ___   ___

     GCF =

10) 26   <u>1</u>   <u>2</u>   <u>13</u>   <u>26</u>   ___   ___   ___   ___   ___

      39   <u>1</u>   <u>3</u>   <u>13</u>   <u>39</u>   ___   ___   ___   ___   ___

      GCF =

11) 36   1   2   3   4   6   9   12   18   36

27   1   3   9   27 ___ ___ ___ ___ ___

GCF =

12) 28   1   2   4   7   14   28 ___ ___ ___

32   1   2   4   8   16   32 ___ ___ ___

GCF =

13) 45   1   3   5   9   15   45 ___ ___ ___

18   1   2   3   6   9   18 ___ ___ ___

GCF =

14) 30   1   2   3   5   6   10   15   30 ___

21   1   3   7   21 ___ ___ ___ ___ ___

GCF =

15) 42   1   2   3   6   7   14   21   42 ___

24   1   2   3   4   6   8   12   24 ___

GCF =

16) 16   1   2   4   8   16 ___ ___ ___ ___

40   1   2   4   5   8   10   20   40 ___

GCF =

SKILL PRACTICE 4

DIRECTIONS: Write the greatest common factor.

Example:

12 Factors: 1, 2, 3, 4, 6, 12

18 Factors: 1, 2, 3, 6, 9, 18

Greatest Common Factor: **6**

---

1) 4
16
GCF =

2) 25
15
GCF =

3) 20
24
GCF =

4) 15
21
GCF =

5) 18
12
GCF =

6) 7
14
GCF =

7) 20
30
GCF =

8) 24
30
GCF =

9) 7
28
GCF =

10) 35
15
GCF =

11) 27
36
GCF =

12) 22
18
GCF =

13) 32
24
GCF =

14) 13
11
GCF =

15) 33
22
GCF =

16) 10
20
GCF =

FORMATIVE TEST

A. Write the greatest common factor.

1) 15
30
GCF =

2) 12
18
GCF =

3) 17
19
GCF =

4) 26
14
GCF =

5) 27
36
GCF =

6) 8
24
GCF =

7) 33
15
GCF =

8) 24
32
GCF =

9) 30
16
GCF =

10) 21
7
GCF =

B. Write the greatest common factor.

1) 20
36
GCF =

2) 9
27
GCF =

3) 24
32
GCF =

4) 12
36
GCF =

5) 9
21
GCF =

6) 20
35
GCF =

7) 28
7
GCF =

8) 15
36
GCF =

9) 27
12
GCF =

10) 6
26
GCF =

UNIT 4: SIMPLEST NAME

GUIDEPAGE

GOAL: To learn to do problems like $\dfrac{4}{8}$ =

STEP 1. FIND THE GREATEST COMMON FACTOR FOR THE NUMERATOR AND DENOMINATOR.

Factors of 4:   1,   2,   ④

Factors of 8:   1,   2,   ④,   8 $\dfrac{4}{8}$ =

Think: **4** is the Greatest Common Factor.

STEP 2. DIVIDE BOTH THE NUMERATOR AND DENOMINATOR BY THE GREATEST COMMON FACTOR.

$$\dfrac{4}{8} \dfrac{(\div 4)}{(\div 4)} = \dfrac{1}{2}$$

Think: $\dfrac{4}{4}$ is another name for 1.

Write: $\dfrac{1}{2}$ is the simplest name for $\dfrac{4}{8}$.

SKILL PRACTICE 1

DIRECTIONS: Write the greatest common factor.

Example:

4	Factors:	1,	2,	4	
8	Factors:	1,	2,	4,	8

Greatest Common Factor: **4**

---

1) 3
12

2) 6
8

3) 4
20

4) 8
10

5) 5
15

6) 9
12

7) 2
10

8) 6
9

9) 7
21

10) 8
36

11) 6
15

12) 4
12

13) 9
24

14) 10
25

15) 15
30

16) 12
36

SKILL PRACTICE 2

DIRECTIONS: In these fractions, the numerator is always the greatest common factor. Divide the numerator and the denominator by the greatest common factor to find the simplest name of the fraction.

Example:

$$\frac{4}{8} \div \frac{4}{4} = \frac{1}{2}$$

1) $\frac{3}{6} \div \frac{?}{?} =$

2) $\frac{4}{16} \div \frac{?}{?} =$

3) $\frac{5}{25} \div \frac{?}{?} =$

4) $\frac{12}{24} \div \frac{?}{?} =$

5) $\frac{7}{21} \div \frac{?}{?} =$

6) $\frac{8}{32} \div \frac{?}{?} =$

7) $\frac{6}{36} \div \frac{?}{?} =$

8) $\frac{4}{28} \div \frac{?}{?} =$

9) $\frac{2}{14} \div \frac{?}{?} =$

10) $\frac{3}{15} \div \frac{?}{?} =$

11) $\frac{10}{30} \div \frac{?}{?} =$

12) $\frac{5}{30} \div \frac{?}{?} =$

13) $\frac{4}{32} \div \frac{?}{?} =$

14) $\frac{6}{24} \div \frac{?}{?} =$

15) $\frac{7}{35} \div \frac{?}{?} =$

16) $\frac{3}{21} \div \frac{?}{?} =$

SKILL PRACTICE 3

DIRECTIONS: In these fractions, the numerator is not always the greatest common factor. Find the greatest common factor of the numerator and denominator and then divide to find the simplest name of the fraction.

Example:

Factors: 1, 2, 4, 8

Factors: 1, 2, 3, 4, 6, 12 $\frac{8}{12}$

Greatest common factor is **4**,

so divide by $\frac{4}{4}$. $\frac{8}{12} \div \frac{4}{4} = \frac{2}{3}$

---

1) $\frac{6 \div ?}{8 \div ?} =$

2) $\frac{10 \div ?}{14 \div ?} =$

3) $\frac{3 \div ?}{9 \div ?} =$

4) $\frac{9 \div ?}{12 \div ?} =$

5) $\frac{5 \div ?}{15 \div ?} =$

6) $\frac{6 \div ?}{14 \div ?} =$

7) $\frac{14 \div ?}{22 \div ?} =$

8) $\frac{12 \div ?}{16 \div ?} =$

9) $\frac{8 \div ?}{18 \div ?} =$

10) $\frac{4 \div ?}{16 \div ?} =$

11) $\frac{10 \div ?}{15 \div ?} =$

12) $\frac{9 \div ?}{21 \div ?} =$

13) $\frac{8 \div ?}{28 \div ?} =$

14) $\frac{12 \div ?}{15 \div ?} =$

15) $\frac{11 \div ?}{33 \div ?} =$

16) $\frac{6 \div ?}{9 \div ?} =$

SKILL PRACTICE 4

DIRECTIONS: Find the simplest name of the fraction.

Examples:

$$\frac{3}{12} \div \frac{3}{3} = \frac{1}{4}$$

(Greatest common factor of
3 and 12 is 3.)

$$\frac{12}{16} \div \frac{4}{4} = \frac{3}{4}$$

(Greatest common factor of
12 and 16 is 4.)

1) $\frac{8}{12}$

2) $\frac{3}{9}$

3) $\frac{9}{24}$

4) $\frac{10}{30}$

5) $\frac{5}{25}$

6) $\frac{6}{8}$

7) $\frac{4}{16}$

8) $\frac{14}{21}$

9) $\frac{4}{14}$

10) $\frac{12}{16}$

11) $\frac{6}{18}$

12) $\frac{16}{32}$

13) $\frac{7}{28}$

14) $\frac{4}{12}$

15) $\frac{18}{21}$

16) $\frac{10}{15}$

FORMATIVE TEST

A. Find the simplest name for these fractions.

1) $\frac{4}{16}$

2) $\frac{12}{18}$

3) $\frac{9}{12}$

4) $\frac{15}{35}$

5) $\frac{7}{21}$

6) $\frac{8}{20}$

7) $\frac{16}{24}$

8) $\frac{3}{18}$

9) $\frac{6}{8}$

10) $\frac{12}{24}$

B. Find the simplest name for these fractions.

1) $\frac{8}{12}$

2) $\frac{18}{27}$

3) $\frac{3}{9}$

4) $\frac{10}{15}$

5) $\frac{8}{24}$

6) $\frac{6}{21}$

7) $\frac{14}{28}$

8) $\frac{12}{32}$

9) $\frac{5}{10}$

10) $\frac{22}{33}$

UNIT 5: ADDING AND SUBTRACTING FRACTIONS: WRITING THE SIMPLEST NAME

GUIDEPAGE

GOAL: To learn to do problems like $\frac{2}{6} + \frac{1}{6} =$

STEP 1.   ADD.

> ***Think:*** This is the sum.

$$\frac{2}{6} + \frac{1}{6} = \frac{3}{6}$$

STEP 2.   FIND THE SIMPLEST NAME FOR THE SUM.

> ***Think:*** Find the Greatest
> Common Factor.

3   1, ③
6   1,   2,   3,   6

> Divide.

$$\frac{3}{6} \div \frac{3}{3} = \frac{1}{2}$$

> ***Write:*** The simplest name
> for the sum is $\frac{1}{2}$.

SKILL PRACTICE 1

DIRECTIONS: Add or subtract. Do not find the simplest name yet.

Examples:

$$\frac{1}{8} + \frac{3}{8} = \frac{4}{8}$$

$$\frac{7}{12} - \frac{4}{12} = \frac{3}{12}$$

1) $\frac{2}{8} + \frac{4}{8} =$

2) $\frac{9}{12} - \frac{6}{12} =$

3) $\frac{5}{12} + \frac{3}{12} =$

4) $\frac{7}{8} - \frac{4}{8} =$

5) $\frac{13}{15} - \frac{8}{15} =$

6) $\frac{8}{16} + \frac{4}{16} =$

7) $\frac{3}{10} + \frac{2}{10} =$

8) $\frac{14}{16} - \frac{6}{16} =$

9) $\frac{7}{25} + \frac{8}{25} =$

10) $\frac{3}{7} + \frac{4}{7} =$

11) $\frac{13}{35} - \frac{5}{35} =$

12) $\frac{8}{9} - \frac{5}{9} =$

13) $\frac{9}{10} - \frac{5}{10} =$

14) $\frac{3}{5} - \frac{1}{5} =$

15) $\frac{1}{18} + \frac{1}{18} =$

16) $\frac{8}{60} + \frac{7}{60} =$

SKILL PRACTICE 2

DIRECTIONS: Write the simplest name for the fractions.

Examples:

$$\frac{4}{12} \div \frac{4}{4} = \frac{1}{3}$$

(The greatest common factor of 4 and 12 is 4.)

$$\frac{6}{9} \div \frac{3}{3} = \frac{2}{3}$$

(The greatest common factor of 6 and 9 is 3.)

1) $\frac{7}{21}$　　　2) $\frac{9}{12}$　　　3) $\frac{6}{24}$　　　4) $\frac{18}{20}$

5) $\frac{3}{12}$　　　6) $\frac{12}{10}$　　　7) $\frac{8}{12}$　　　8) $\frac{5}{15}$

9) $\frac{4}{8}$　　　10) $\frac{3}{9}$　　　11) $\frac{4}{10}$　　　12) $\frac{45}{60}$

13) $\frac{10}{14}$　　　14) $\frac{6}{8}$　　　15) $\frac{2}{4}$　　　16) $\frac{12}{15}$

SKILL PRACTICE 3

DIRECTIONS: Add or subtract. Then simplify, if needed.

Examples:

Think: Greatest common factor of 6 and 9 is 3.

$$\frac{4}{9} + \frac{2}{9} = \frac{6}{9} \div \frac{3}{3} = \frac{2}{3}$$

Greatest common factor of 4 and 8 is 4.

$$\frac{5}{8} - \frac{1}{8} = \frac{4}{8} \div \frac{4}{4} = \frac{1}{2}$$

1) $\frac{7}{8} - \frac{1}{8} =$

2) $\frac{1}{12} + \frac{3}{12} =$

3) $\frac{6}{7} - \frac{3}{7} =$

4) $\frac{7}{30} + \frac{13}{30} =$

5) $\frac{7}{10} - \frac{3}{10} =$

6) $\frac{11}{22} + \frac{1}{22} =$

7) $\frac{14}{20} - \frac{6}{20} =$

8) $\frac{3}{8} + \frac{3}{8} =$

9) $\frac{2}{16} + \frac{8}{16} =$

10) $\frac{11}{12} - \frac{5}{12} =$

11) $\frac{3}{9} + \frac{4}{9} =$

12) $\frac{12}{16} - \frac{6}{16} =$

13) $\frac{6}{18} + \frac{8}{18} =$

14) $\frac{9}{16} - \frac{2}{16} =$

15) $\frac{3}{14} + \frac{9}{14} =$

16) $\frac{14}{15} - \frac{5}{15} =$

FORMATIVE TEST

A. Add or subtract.
Then simplify, if needed.

1) $\frac{5}{8} - \frac{3}{8} =$

2) $\frac{1}{14} + \frac{5}{14} =$

3) $\frac{3}{4} - \frac{1}{4} =$

4) $\frac{3}{16} + \frac{1}{16} =$

5) $\frac{10}{14} - \frac{6}{14} =$

6) $\frac{1}{14} + \frac{5}{14} =$

7) $\frac{2}{15} + \frac{8}{15} =$

8) $\frac{7}{8} - \frac{2}{8} =$

9) $\frac{8}{24} + \frac{7}{24} =$

10) $\frac{11}{16} - \frac{3}{16} =$

B. Add or subtract.
Then simplify, if needed.

1) $\frac{6}{28} + \frac{15}{28} =$

2) $\frac{11}{12} - \frac{2}{12} =$

3) $\frac{2}{7} + \frac{3}{7} =$

4) $\frac{13}{20} - \frac{7}{20} =$

5) $\frac{3}{12} + \frac{1}{12} =$

6) $\frac{14}{16} - \frac{6}{16} =$

7) $\frac{12}{13} - \frac{2}{13} =$

8) $\frac{5}{6} - \frac{2}{6} =$

9) $\frac{10}{20} + \frac{4}{20} =$

10) $\frac{2}{30} + \frac{7}{30} =$

UNIT 6: ADDING AND SUBTRACTING MIXED NUMBERS WITH LIKE DENOMINATORS

GUIDEPAGE

GOAL: To learn to do problems like

$$7 \frac{4}{8}$$
$$-3 \frac{2}{8}$$

STEP 1. SUBTRACT THE FRACTIONS.

Think: $\frac{4}{8} - \frac{2}{8} = \mathbf{\frac{2}{8}}$

$$7 \frac{4}{8}$$
$$-3 \frac{2}{8}$$
$$\overline{\quad \mathbf{\frac{2}{8}}}$$

STEP 2. SUBTRACT THE WHOLE NUMBERS.

Think: $7 - 3 = \mathbf{4}$

$$7 \frac{4}{8}$$
$$-3 \frac{2}{8}$$
$$\overline{\mathbf{4} \frac{2}{8}}$$

STEP 3. SIMPLIFY THE FRACTION.

Think: The GCF is 2.

$\frac{2}{8} \div \frac{2}{2} = \frac{1}{4}$

The simplest name
for the difference is
$4 \frac{1}{4}$.

$$7 \frac{4}{8}$$
$$-3 \frac{2}{8}$$
$$\overline{4 \frac{2}{8}} = \mathbf{4 \frac{1}{4}}$$

SKILL PRACTICE 1

DIRECTIONS: Add or subtract. Do not simplify.

Examples:

$$5 \frac{2}{9}$$
$$+ 2 \frac{1}{9}$$
$$\overline{7 \frac{3}{9}}$$

$$3 \frac{3}{4}$$
$$- 1 \frac{1}{4}$$
$$\overline{2 \frac{2}{4}}$$

1)
$$2 \frac{3}{5}$$
$$+ 1 \frac{1}{5}$$

2)
$$6 \frac{7}{8}$$
$$- 2 \frac{1}{8}$$

3)
$$9 \frac{5}{10}$$
$$- 4 \frac{2}{10}$$

4)
$$8 \frac{1}{4}$$
$$+ 6 \frac{1}{4}$$

5)
$$10 \frac{8}{16}$$
$$- 7 \frac{6}{16}$$

6)
$$12 \frac{7}{12}$$
$$- 5 \frac{2}{12}$$

7)
$$16 \frac{6}{12}$$
$$+ 7 \frac{5}{12}$$

8)
$$5 \frac{3}{8}$$
$$+ 3 \frac{1}{8}$$

9)
$$6 \frac{7}{9}$$
$$- 5 \frac{5}{9}$$

10)
$$17 \frac{9}{16}$$
$$+ 3 \frac{3}{16}$$

11)
$$4 \frac{4}{6}$$
$$- 2 \frac{2}{6}$$

12)
$$15 \frac{6}{14}$$
$$+ 6 \frac{7}{14}$$

13)
$$8 \frac{5}{10}$$
$$+ 4 \frac{3}{10}$$

14)
$$9 \frac{9}{12}$$
$$- 6 \frac{2}{12}$$

15)
$$10 \frac{8}{18}$$
$$+ 5 \frac{3}{18}$$

16)
$$17 \frac{8}{10}$$
$$- 8 \frac{3}{10}$$

SKILL PRACTICE 2

DIRECTIONS: Simplify the fractions in the mixed numbers.

Example:

Think: Greatest common factor of 6 and 9 is 3.

$$\frac{6 \div 3}{9 \div 3} = \frac{2}{3}$$

$$4\frac{6}{9} = \mathbf{4\frac{2}{3}}$$

1) $5\frac{4}{12}$

2) $3\frac{8}{18}$

3) $2\frac{6}{9}$

4) $11\frac{6}{8}$

5) $10\frac{12}{16}$

6) $8\frac{6}{15}$

7) $7\frac{2}{4}$

8) $6\frac{14}{18}$

9) $2\frac{21}{35}$

10) $6\frac{15}{27}$

11) $4\frac{9}{36}$

12) $9\frac{16}{24}$

13) $3\frac{15}{20}$

14) $5\frac{22}{33}$

15) $1\frac{12}{21}$

16) $7\frac{18}{36}$

SKILL PRACTICE 3

DIRECTIONS: Add or subtract. Simplify the sum or difference.

Examples:

$$4 \frac{3}{8}$$
$$+ 1 \frac{3}{8}$$
$$5 \frac{6}{8} = 5 \frac{3}{4}$$

$$7 \frac{7}{9}$$
$$- 3 \frac{1}{9}$$
$$4 \frac{6}{9} = 4 \frac{2}{3}$$

1) $6 \frac{4}{6}$
$- 3 \frac{1}{6}$

2) $7 \frac{4}{15}$
$+ 2 \frac{6}{15}$

3) $9 \frac{4}{10}$
$- 4 \frac{2}{10}$

4) $18 \frac{9}{16}$
$+ 3 \frac{3}{16}$

5) $10 \frac{8}{10}$
$- 7 \frac{2}{10}$

6) $12 \frac{7}{12}$
$+ 5 \frac{4}{12}$

7) $16 \frac{10}{12}$
$- 7 \frac{6}{12}$

8) $5 \frac{2}{8}$
$+ 3 \frac{4}{8}$

9) $17 \frac{9}{20}$
$+ 9 \frac{7}{20}$

10) $4 \frac{4}{6}$
$- 2 \frac{2}{6}$

11) $6 \frac{8}{9}$
$- 4 \frac{4}{9}$

12) $15 \frac{2}{14}$
$+ 6 \frac{4}{14}$

13) $8 \frac{11}{15}$
$- 4 \frac{2}{15}$

14) $9 \frac{3}{16}$
$+ 4 \frac{5}{16}$

15) $10 \frac{5}{14}$
$+ 2 \frac{4}{14}$

16) $17 \frac{8}{10}$
$- 8 \frac{2}{10}$

FORMATIVE TEST

A. Add or subtract.
Simplify.

1) $17 \frac{9}{18}$
$+ 8 \frac{3}{18}$

2) $11 \frac{8}{10}$
$- 6 \frac{4}{10}$

3) $6 \frac{3}{8}$
$+ 1 \frac{2}{8}$

4) $14 \frac{5}{6}$
$- 9 \frac{2}{6}$

5) $8 \frac{2}{9}$
$+ 6 \frac{4}{9}$

6) $12 \frac{16}{18}$
$- 7 \frac{9}{18}$

7) $16 \frac{6}{14}$
$+ 9 \frac{4}{14}$

8) $5 \frac{10}{12}$
$- 2 \frac{6}{12}$

9) $7 \frac{7}{15}$
$+ 6 \frac{5}{15}$

10) $17 \frac{9}{18}$
$- 9 \frac{2}{18}$

B. Add or subtract.
Simplify.

1) $15 \frac{5}{16}$
$+ 6 \frac{3}{16}$

2) $9 \frac{18}{20}$
$- 5 \frac{4}{20}$

3) $10 \frac{8}{12}$
$+ 4 \frac{2}{12}$

4) $11 \frac{8}{14}$
$- 7 \frac{3}{14}$

5) $18 \frac{9}{18}$
$+ 9 \frac{6}{18}$

6) $5 \frac{7}{9}$
$- 2 \frac{1}{9}$

7) $13 \frac{3}{10}$
$+ 7 \frac{4}{10}$

8) $16 \frac{14}{21}$
$- 7 \frac{7}{21}$

9) $7 \frac{5}{16}$
$+ 2 \frac{1}{16}$

10) $12 \frac{15}{30}$
$- 2 \frac{6}{30}$

UNIT 7: MULTIPLYING FRACTIONS

GUIDEPAGE

GOAL: To learn to do problems like $\frac{2}{3} \times \frac{1}{2} =$ $\qquad$ $4 \times \frac{1}{8} =$

Example 1:

STEP 1.   MULTIPLY NUMERATORS AND DENOMINATORS.

Think: $\begin{array}{l} 2 \times 1 = 2 \\ 3 \times 2 = 6 \end{array}$ $\qquad$ $\frac{2}{3} \times \frac{1}{2} = \frac{2}{6}$

STEP 2.   SIMPLIFY.

Think: $\frac{2}{6} \div \frac{2}{2} = \frac{1}{3}$ $\qquad$ $\frac{2}{3} \times \frac{1}{2} = \frac{2}{6}$
   (GCF)

$\frac{1}{3}$ is the simplest name. $\qquad$ $\frac{2}{6} = \frac{1}{3}$

Example 2:

STEP 1.   WRITE THE WHOLE NUMBER AS A FRACTION.

Think: $\frac{4}{1}$ is the same as 4. $\qquad$ $4 \times \frac{1}{8} =$

$\frac{4}{1} \times \frac{1}{8} =$

STEP 2.   MULTIPLY NUMERATORS AND DENOMINATORS.

Think: $\begin{array}{l} 4 \times 1 = 4 \\ 1 \times 8 = 8 \end{array}$ $\qquad$ $\frac{4}{1} \times \frac{1}{8} = \frac{4}{8}$

STEP 3.   SIMPLIFY.

Think: $\frac{4}{8} \div \frac{4}{4} = \frac{1}{2}$ $\qquad$ $4 \times \frac{1}{8} = \frac{4}{8}$
   (GCF)

$\frac{1}{2}$ is the simplest name. $\qquad$ $\frac{4}{8} = \frac{1}{2}$

SKILL PRACTICE 1

DIRECTIONS: Multiply. Do not simplify yet.

Example:

$$\frac{2}{3} \times \frac{3}{8} = \frac{6}{24}$$

1) $\frac{3}{4} \times \frac{4}{5} =$

2) $\frac{5}{7} \times \frac{2}{3} =$

3) $\frac{1}{2} \times \frac{3}{4} =$

4) $\frac{7}{8} \times \frac{2}{3} =$

5) $\frac{3}{8} \times \frac{1}{2} =$

6) $\frac{3}{4} \times \frac{7}{9} =$

7) $\frac{3}{5} \times \frac{1}{3} =$

8) $\frac{5}{6} \times \frac{4}{5} =$

9) $\frac{1}{4} \times \frac{3}{10} =$

10) $\frac{2}{5} \times \frac{3}{8} =$

11) $\frac{6}{7} \times \frac{2}{7} =$

12) $\frac{1}{5} \times \frac{1}{5} =$

13) $\frac{2}{7} \times \frac{7}{10} =$

14) $\frac{8}{12} \times \frac{1}{2} =$

15) $\frac{2}{9} \times \frac{2}{9} =$

16) $\frac{2}{11} \times \frac{3}{5} =$

SKILL PRACTICE 2

DIRECTIONS: Multiply. Write the simplest name for the product.

Example:

$$\frac{3}{4} \times \frac{4}{5} = \frac{12}{20} = \frac{3}{5}$$

---

1) $\frac{6}{7} \times \frac{2}{3} =$

2) $\frac{1}{4} \times \frac{2}{7} =$

3) $\frac{1}{5} \times \frac{7}{8} =$

4) $\frac{2}{9} \times \frac{3}{4} =$

5) $\frac{6}{12} \times \frac{1}{3} =$

6) $\frac{3}{10} \times \frac{5}{6} =$

7) $\frac{1}{2} \times \frac{1}{4} =$

8) $\frac{2}{5} \times \frac{3}{7} =$

9) $\frac{2}{3} \times \frac{4}{5} =$

10) $\frac{4}{7} \times \frac{7}{8} =$

11) $\frac{4}{9} \times \frac{3}{5} =$

12) $\frac{1}{6} \times \frac{4}{5} =$

13) $\frac{1}{3} \times \frac{5}{11} =$

14) $\frac{5}{6} \times \frac{1}{8} =$

15) $\frac{8}{9} \times \frac{2}{7} =$

16) $\frac{3}{8} \times \frac{8}{12} =$

SKILL PRACTICE 3

DIRECTIONS: Rewrite the problem showing the whole number as a fraction. Do not multiply.

Example:

$$2 \times \frac{3}{8} =$$

Rewrite as $\frac{2}{1} \times \frac{3}{8} =$

1) $3 \times \frac{2}{9} =$

2) $2 \times \frac{2}{4} =$

3) $6 \times \frac{1}{8} =$

4) $\frac{2}{11} \times 4 =$

5) $\frac{3}{12} \times 3 =$

6) $5 \times \frac{2}{10} =$

7) $2 \times \frac{3}{7} =$

8) $\frac{3}{15} \times 3 =$

9) $\frac{1}{4} \times 3 =$

10) $2 \times \frac{2}{6} =$

11) $\frac{4}{12} \times 3 =$

12) $6 \times \frac{1}{6} =$

13) $4 \times \frac{2}{15} =$

14) $\frac{3}{18} \times 6 =$

15) $\frac{11}{60} \times 5 =$

16) $\frac{2}{7} \times 3 =$

FORMATIVE TEST

A. Multiply and simplify the product if necessary.

1) $\frac{2}{7} \times 3 =$

2) $\frac{5}{6} \times \frac{4}{5} =$

3) $4 \times \frac{3}{15} =$

4) $\frac{1}{3} \times \frac{2}{5} =$

5) $\frac{3}{4} \times \frac{7}{9} =$

6) $6 \times \frac{3}{28} =$

7) $4 \times \frac{3}{12} =$

8) $\frac{2}{3} \times \frac{9}{12} =$

9) $\frac{3}{10} \times \frac{3}{4} =$

10) $\frac{6}{24} \times 3 =$

B. Multiply and simplify the product if necessary.

1) $\frac{1}{5} \times \frac{10}{11} =$

2) $\frac{3}{8} \times \frac{6}{8} =$

3) $\frac{3}{16} \times 5 =$

4) $8 \times \frac{3}{32} =$

5) $\frac{1}{2} \times \frac{3}{4} =$

6) $5 \times \frac{5}{45} =$

7) $\frac{2}{14} \times 7 =$

8) $5 \times \frac{2}{16} =$

9) $\frac{6}{11} \times \frac{2}{3} =$

10) $\frac{2}{5} \times \frac{3}{7} =$

UNIT 8: FRACTIONS – CANCELLING IN MULTIPLICATION

GUIDEPAGE

GOAL: To learn to do problems like $\qquad$ $\frac{3}{10} \times \frac{5}{9} =$

STEP 1.　WRITE THE PRIME FACTORS FOR EACH NUMBER.

Think: A prime factor has no factors but itself and 1.

$$3 = 1 \times 3$$
$$10 = 1 \times 2 \times 5$$
$$5 = 1 \times 5$$
$$9 = 1 \times 3 \times 3$$

$$\frac{3}{10} \times \frac{5}{9} =$$

$$\frac{1 \times 3}{1 \times 2 \times 5} \times \frac{1 \times 5}{1 \times 3 \times 3}$$

STEP 2.　CANCEL (OR CROSS OUT) NUMBERS IN BOTH THE NUMERATOR AND DENOMINATOR (EXCEPT THE ONES).

Think: There is a 3 in both the numerator and denominator. Also, a 5 in both. Cross them out.

$$\frac{1 \times \cancel{3}}{1 \times 2 \times \cancel{5}} \times \frac{1 \times \cancel{5}}{1 \times \cancel{3} \times 3}$$

STEP 3.　MULTIPLY THE NUMBERS LEFT.

Think: There is no need to simplify.

$$\frac{1}{1 \times 2} \times \frac{1}{1 \times 3} = \frac{1}{6}$$

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SKILL PRACTICE 1

DIRECTIONS: Write the prime factors for each number.

Example:

$$12 = 1 \times 2 \times 2 \times 3$$

1) 18

2) 30

3) 19

4) 16

5) 24

6) 23

7) 9

8) 21

9) 22

10) 8

11) 28

12) 29

13) 14

14) 11

15) 15

16) 12

SKILL PRACTICE 2

DIRECTIONS: Write the prime factors for each number and cancel common factors.

Example:

> ***Think:*** Cancel the 3.
> It is in both the numerator and denominator.

$$\frac{3}{7} \times \frac{5}{6} = \frac{1 \times \cancel{3}}{1 \times 7} \times \frac{1 \times 5}{1 \times 2 \times \cancel{3}}$$

1) $\frac{7}{8} \times \frac{2}{3} =$

2) $\frac{2}{5} \times \frac{3}{12} =$

3) $\frac{5}{14} \times \frac{7}{9} =$

4) $\frac{5}{6} \times \frac{3}{4} =$

5) $\frac{3}{8} \times \frac{2}{7} =$

6) $\frac{4}{9} \times \frac{1}{4} =$

7) $\frac{6}{15} \times \frac{5}{11} =$

8) $\frac{7}{12} \times \frac{5}{14} =$

9) $\frac{5}{19} \times \frac{5}{6} =$

10) $\frac{1}{2} \times \frac{8}{17} =$

11) $\frac{3}{7} \times \frac{5}{9} =$

12) $\frac{5}{6} \times \frac{1}{5} =$

13) $\frac{9}{14} \times \frac{2}{7} =$

14) $\frac{7}{12} \times \frac{3}{10} =$

15) $\frac{1}{5} \times \frac{5}{7} =$

16) $\frac{3}{10} \times \frac{5}{11} =$

SKILL PRACTICE 3

DIRECTIONS: Write the prime factors for each number and cancel common factors.

Example:

> *Think:* Cancel two 2's and one 3 on both the top and bottom.

$$\frac{8}{9} \times \frac{3}{4} = \frac{1 \times \cancel{2} \times \cancel{2} \times 2}{1 \times \cancel{3} \times 3} \times \frac{1 \times \cancel{3}}{1 \times \cancel{2} \times \cancel{2}}$$

---

1) $\frac{4}{15} \times \frac{5}{12} =$

2) $\frac{8}{9} \times \frac{6}{12} =$

3) $\frac{5}{7} \times \frac{14}{25} =$

4) $\frac{2}{3} \times \frac{9}{16} =$

5) $\frac{3}{14} \times \frac{7}{8} =$

6) $\frac{26}{30} \times \frac{15}{13} =$

7) $\frac{14}{15} \times \frac{5}{7} =$

8) $\frac{3}{7} \times \frac{14}{27} =$

9) $\frac{5}{26} \times \frac{2}{15} =$

10) $\frac{9}{20} \times \frac{4}{9} =$

11) $\frac{19}{21} \times \frac{14}{19} =$

12) $\frac{4}{7} \times \frac{11}{12} =$

13) $\frac{5}{16} \times \frac{8}{15} =$

14) $\frac{7}{20} \times \frac{5}{14} =$

15) $\frac{5}{6} \times \frac{2}{15} =$

16) $\frac{6}{13} \times \frac{13}{18} =$

SKILL PRACTICE 4

DIRECTIONS: The common factors are cancelled. Multiply.

Example: $\dfrac{8}{9} \times \dfrac{3}{4} = \dfrac{1\times\cancel{2}\times\cancel{2}\times 2}{1\times\cancel{3}\times 3} \times \dfrac{1\times\cancel{3}}{1\times\cancel{2}\times\cancel{2}} = \dfrac{2}{3}$

---

1) $\dfrac{1\times\cancel{2}\times\cancel{2}}{1\times 3\times\cancel{5}} \times \dfrac{1\times\cancel{5}}{1\times\cancel{2}\times\cancel{2}\times 3}$

2) $\dfrac{1\times\cancel{2}\times\cancel{2}}{1\times\cancel{5}\times 3} \times \dfrac{1\times\cancel{5}}{1\times\cancel{2}\times\cancel{2}\times 3}$

3) $\dfrac{1\times\cancel{5}}{1\times\cancel{7}} \times \dfrac{1\times 2\times\cancel{7}}{1\times\cancel{5}\times 5}$

4) $\dfrac{1\times\cancel{2}}{1\times\cancel{3}} \times \dfrac{1\times\cancel{3}\times 3}{1\times\cancel{2}\times 2\times 2\times 2}$

5) $\dfrac{1\times 3}{1\times 2\times\cancel{7}} \times \dfrac{1\times\cancel{7}}{1\times 7}$

6) $\dfrac{1\times\cancel{2}\times\cancel{13}}{1\times\cancel{2}\times\cancel{3}\times\cancel{5}} \times \dfrac{1\times\cancel{3}\times\cancel{5}}{1\times\cancel{13}}$

7) $\dfrac{1\times 2\times\cancel{7}}{1\times 3\times\cancel{5}} \times \dfrac{1\times\cancel{5}}{1\times\cancel{7}}$

8) $\dfrac{1\times\cancel{3}}{1\times\cancel{7}} \times \dfrac{1\times 2\times\cancel{7}}{1\times\cancel{3}\times 3\times 3}$

9) $\dfrac{1\times\cancel{5}}{1\times\cancel{2}\times 13} \times \dfrac{1\times\cancel{2}}{1\times 3\times\cancel{5}}$

10) $\dfrac{1\times\cancel{3}\times\cancel{3}}{1\times\cancel{2}\times\cancel{2}\times 5} \times \dfrac{1\times\cancel{2}\times\cancel{2}}{1\times\cancel{3}\times\cancel{3}}$

11) $\dfrac{1 \times \cancel{19}}{1 \times 3 \times \cancel{7}} \times \dfrac{1 \times 2 \times \cancel{7}}{1 \times \cancel{19}}$

12) $\dfrac{1 \times \cancel{2} \times \cancel{2}}{1 \times 7} \times \dfrac{1 \times 11}{1 \times \cancel{2} \times \cancel{2} \times 3}$

13) $\dfrac{1 \times \cancel{5}}{1 \times \cancel{2} \times \cancel{2} \times \cancel{2} \times 2} \times \dfrac{1 \times \cancel{2} \times \cancel{2} \times \cancel{2}}{1 \times 3 \times \cancel{5}}$

14) $\dfrac{1 \times \cancel{7}}{1 \times 2 \times 2 \times \cancel{5}} \times \dfrac{1 \times \cancel{5}}{1 \times 2 \times \cancel{7}}$

15) $\dfrac{1 \times \cancel{5}}{1 \times \cancel{2} \times 3} \times \dfrac{1 \times \cancel{2}}{1 \times 3 \times \cancel{5}}$

16) $\dfrac{1 \times \cancel{2} \times \cancel{3}}{1 \times \cancel{13}} \times \dfrac{1 \times \cancel{13}}{1 \times \cancel{2} \times \cancel{3} \times 3}$

SKILL PRACTICE 5

DIRECTIONS: Factor, cancel and multiply.

Example:

$$\frac{7}{10} \times \frac{6}{7} = \frac{1 \times \cancel{7}}{1 \times \cancel{2} \times 5} \times \frac{1 \times \cancel{2} \times 3}{1 \times \cancel{7}} = \frac{3}{5}$$

1) $\frac{7}{8} \times \frac{4}{21} =$

2) $\frac{9}{34} \times \frac{17}{18} =$

3) $\frac{5}{16} \times \frac{4}{5} =$

4) $\frac{4}{7} \times \frac{21}{26} =$

5) $\frac{12}{15} \times \frac{10}{21} =$

6) $\frac{8}{9} \times \frac{15}{16} =$

7) $\frac{15}{44} \times \frac{22}{45} =$

8) $\frac{14}{15} \times \frac{5}{8} =$

9) $\frac{4}{5} \times \frac{3}{4} =$

10) $\frac{13}{14} \times \frac{2}{3} =$

11) $\frac{3}{11} \times \frac{33}{42} =$

12) $\frac{12}{25} \times \frac{5}{6} =$

13) $\frac{14}{27} \times \frac{9}{10} =$

14) $\frac{9}{19} \times \frac{38}{45} =$

15) $\frac{16}{35} \times \frac{7}{8} =$

16) $\frac{3}{5} \times \frac{15}{24} =$

FORMATIVE TEST

A. Factor, cancel and multiply.

1) $\dfrac{3}{5} \times \dfrac{15}{21} =$

2) $\dfrac{7}{12} \times \dfrac{9}{28} =$

3) $\dfrac{2}{5} \times \dfrac{15}{18} =$

4) $\dfrac{10}{13} \times \dfrac{7}{20} =$

5) $\dfrac{3}{14} \times \dfrac{7}{18} =$

6) $\dfrac{6}{27} \times \dfrac{9}{14} =$

7) $\dfrac{17}{18} \times \dfrac{9}{34} =$

8) $\dfrac{2}{3} \times \dfrac{11}{12} =$

9) $\dfrac{15}{22} \times \dfrac{11}{30} =$

10) $\dfrac{6}{7} \times \dfrac{14}{18} =$

B. Factor, cancel and multiply.

1) $\dfrac{14}{27} \times \dfrac{9}{22} =$

2) $\dfrac{12}{27} \times \dfrac{9}{10} =$

3) $\dfrac{7}{13} \times \dfrac{39}{49} =$

4) $\dfrac{5}{6} \times \dfrac{12}{25} =$

5) $\dfrac{3}{7} \times \dfrac{14}{27} =$

6) $\dfrac{9}{20} \times \dfrac{5}{36} =$

7) $\dfrac{16}{21} \times \dfrac{7}{8} =$

8) $\dfrac{8}{15} \times \dfrac{3}{14} =$

9) $\dfrac{7}{16} \times \dfrac{8}{21} =$

10) $\dfrac{7}{17} \times \dfrac{17}{21} =$

UNIT 9: LEAST COMMON MULTIPLE
GUIDEPAGE

Goal: To learn to do problems like

Find the least common multiple of 4 and 6.

STEP 1.   FIND THE MULTIPLES OF EACH NUMBER.

Think: Multiply each number by 1, 2, 3, 4 and so on.

4	4	8	12	16	20	24	28	32	36
6	6	12	18	24	30	36	42	48	54

STEP 2.   FIND THE NUMBERS THAT ARE MULTIPLES OF BOTH.

Think: These are called the common multiples.

4	4	8	(12)	16	20	(24)	28	32	(36)
6	6	(12)	18	(24)	30	(36)	42	48	54

STEP 3.   FIND THE SMALLEST COMMON MULTIPLE.

Think: This is called the Least Common Multiple.

12 is the Least (or smallest) Common Multiple of 4 and 6.

4	4	8	**12**
6	6	**12**	

SKILL PRACTICE 1

Example:

5 5, 10, 15, 20, 25

1)   4

2)   9

3)   10

4)   11

5)   6

6)   15

7)   17

8)   7

9)   16

10)   3

11)   20

12)   8

13)   13

14)   2

15)   12

16)   25

SKILL PRACTICE 2

DIRECTIONS: Find the Least Common Multiple (LCM).

Example:

3 3, (6,) 9, 12, 15

2 2, 4, (6,) 8, 10

LCM = **6**

The least common multiple of 3 and 2 is **6**.

---

1) **6** 6, 12, 18, 24, 30, 36
   4 4, 8, 12, 16, 20, 24
   LCM =

2) **3** 3, 6, 9, 12, 15, 18
   9 9, 18, 27, 36, 45
   LCM =

3) **8** 8, 16, 24, 32, 40, 48
   12 12, 24, 36, 48, 60, 72
   LCM =

4) **6** 6, 12, 18, 24, 30, 36
   15 15, 30, 45, 60, 75, 90
   LCM =

5)   **2**   2,   4,   6,   8,   10,   12

        8   8,   16,   24,   32,   40

        LCM =

6)   **4**   4,   8,   12,   16,   20,   24

        10   10,   20,   30,   40,   50,   60

        LCM =

7)   **6**   6,   12,   18,   24,   30,   36

        5   5,   10,   15,   20,   25,   30,   35

        LCM =

8)   **8**   8,   16,   24,   32,   40,   48

        3   3,   6,   9,   12,   15,   18,   21,   24

        LCM =

9)   **7**   7,   14,   21,   28,   35,   42

        4   4,   8,   12,   16,   20,   24,   28

        LCM =

10)   **12**   12,   24,   36,   48,   60,   72

        16   16,   32,   48,   64,   80,   96

        LCM =

11)   **5**   5,   10,   15,   20,   25,   30

        10   10,   20,   30,   40,   50,   60

        LCM =

12) **16** 16, 32, 48, 64

4 4, 8, 12, 16, 20, 24

LCM =

13) **14** 14, 28, 42, 56, 70, 84

6 6, 12, 18, 24, 30, 36, 42

LCM =

14) **8** 8, 16, 24, 32, 40, 48

10 10, 20, 30, 40, 50, 60

LCM =

15) **7** 7, 14, 21, 28, 35, 42

5 5, 10, 15, 20, 25, 30, 35

LCM =

16) **9** 9, 18, 27, 36, 45, 54, 63, 72, 81

8 8, 16, 24, 32, 40, 48, 56, 64, 72, 80

LCM =

SKILL PRACTICE 3

DIRECTIONS: List the multiples of each of the numbers until you find one that is common to both. This is the least common multiple (LCM).

Examples:

6　**6 ⑫ 18**
4　**4 8 ⑫**
LCM = **12**

2　**2 4 ⑥**
6　**⑥**
LCM = **6**

---

1)　3
　　9
　　LCM =

2)　6
　　8
　　LCM =

3)　9
　　12
　　LCM =

4)　3
　　2
　　LCM =

5)　4
　　7
　　LCM =

6)　3
　　8
　　LCM =

7)　5
　　12
　　LCM =

8)　11
　　3
　　LCM =

9)　14
　　7
　　LCM =

10)　6
　　5
　　LCM =

11)　8
　　4
　　LCM =

12)　12
　　10
　　LCM =

13)　9
　　5
　　LCM =

14)　12
　　15
　　LCM =

15)　18
　　9
　　LCM =

16)　16
　　12
　　LCM =

FORMATIVE TEST

A. Find the least
common multiple.

1) 12
16
LCM =

2) 3
7
LCM =

3) 5
8
LCM =

4) 2
9
LCM =

5) 6
8
LCM =

6) 8
12
LCM =

7) 16
4
LCM =

8) 9
5
LCM =

9) 15
10
LCM =

10) 16
6
LCM =

B. Find the least
common multiple.

1) 6
2
LCM =

2) 3
8
LCM =

3) 5
7
LCM =

4) 9
4
LCM =

5) 16
10
LCM =

6) 4
6
LCM =

7) 5
3
LCM =

8) 13
5
LCM =

9) 18
12
LCM =

10) 6
9
LCM =

UNIT 10: LEAST COMMON DENOMINATOR

GUIDEPAGE

GOAL: To learn to do problems like

Write these with a common denominator. $\frac{5}{6}$ and $\frac{2}{9}$ =

STEP 1.   FIND THE LEAST COMMON MULTIPLE FOR THE DENOMINATORS.

$$\frac{5}{6} \text{ and } \frac{2}{9}$$

6:   6   12   **18**
9:   9   **18**

Think: The Least Common Multiple is 18.

18 is also called the least common denominator.

STEP 2.   RENAME THE FRACTIONS TO HAVE THE SAME DENOMINATOR.

Think: $\frac{5}{6} = \frac{?}{18}$ $6 \times \mathbf{3} = 18$ $\frac{5}{6} \times \frac{\mathbf{3}}{\mathbf{3}} = \frac{15}{18}$

$\frac{2}{9} = \frac{?}{18}$ $9 \times \mathbf{2} = 18$ $\frac{2}{9} \times \frac{\mathbf{2}}{\mathbf{2}} = \frac{4}{18}$

SKILL PRACTICE 1

DIRECTIONS: Write the Least Common Denominator (LCD).

Example:

Think: Look at the denominators, and find the least common multiple.

$\frac{3}{4}, \frac{5}{6}$

4   4   8   **12**

6   6   **12**

LCD = **12**

Think: **12** is the least common multiple and the least common denominator.

---

1) $\frac{1}{4}, \frac{5}{12}$

2) $\frac{5}{6}, \frac{4}{9}$

3) $\frac{2}{5}, \frac{7}{15}$

4) $\frac{1}{2}, \frac{1}{6}$

5) $\frac{2}{3}, \frac{2}{9}$

6) $\frac{4}{7}, \frac{9}{14}$

7) $\frac{3}{4}, \frac{5}{6}$

8) $\frac{1}{9}, \frac{11}{15}$

9) $\frac{1}{3}, \frac{2}{7}$

10) $\frac{5}{6}, \frac{7}{10}$

11) $\frac{1}{2}, \frac{3}{5}$

12) $\frac{1}{2}, \frac{2}{3}$

13) $\frac{7}{8}, \frac{5}{12}$

14) $\frac{1}{5}, \frac{1}{6}$

15) $\frac{5}{6}, \frac{5}{8}$

16) $\frac{3}{10}, \frac{4}{15}$

SKILL PRACTICE 2

DIRECTIONS: Write the equivalent fractions.

Examples:

$$\frac{3}{4} = \frac{?}{12}$$

Write: $\frac{9}{12}$

1) $\frac{2}{3} = \frac{?}{9}$

2) $\frac{1}{4} = \frac{?}{12}$

3) $\frac{1}{5} = \frac{?}{10}$

4) $\frac{3}{4} = \frac{?}{8}$

5) $\frac{1}{6} = \frac{?}{12}$

6) $\frac{3}{5} = \frac{?}{10}$

7) $\frac{2}{3} = \frac{?}{6}$

8) $\frac{1}{7} = \frac{?}{14}$

9) $\frac{1}{3} = \frac{?}{9}$

10) $\frac{5}{6} = \frac{?}{12}$

11) $\frac{3}{6} = \frac{?}{12}$

12) $\frac{1}{4} = \frac{?}{8}$

13) $\frac{1}{3} = \frac{?}{6}$

14) $\frac{2}{4} = \frac{?}{8}$

15) $\frac{2}{5} = \frac{?}{10}$

16) $\frac{1}{2} = \frac{?}{10}$

SKILL PRACTICE 3

DIRECTIONS: Write the least common denominator and rename the fractions to have the same denominator.

Example:

Think: Find the least common denominator. $\frac{1}{4}, \frac{5}{12}$

4   4   8   **12**

12   **12**

LCD is **12**.

Think: Find an equivalent fraction for $\frac{1}{4}$.

$$\frac{1}{4} = \frac{?}{12} \qquad \frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$$

Write: $\frac{3}{12}, \frac{5}{12}$

---

1) $\frac{2}{3}, \frac{5}{6}$

2) $\frac{1}{12}, \frac{1}{2}$

3) $\frac{2}{7}, \frac{5}{14}$

4) $\frac{5}{8}, \frac{3}{4}$

5) $\frac{9}{14}, \frac{3}{7}$

6) $\frac{3}{10}, \frac{4}{5}$

7) $\frac{13}{18}, \frac{5}{6}$

8) $\frac{2}{3}, \frac{7}{12}$

9) $\frac{2}{13}, \frac{3}{7}$

10) $\frac{11}{21}, \frac{4}{7}$

11) $\frac{1}{3}, \frac{13}{15}$

12) $\frac{4}{15}, \frac{2}{5}$

13) $\frac{3}{8}, \frac{3}{16}$

14) $\frac{1}{4}, \frac{11}{12}$

15) $\frac{2}{3}, \frac{1}{21}$

16) $\frac{3}{4}, \frac{13}{16}$

SKILL PRACTICE 4

DIRECTIONS: Write the least common denominator and rename the fractions to have the same denominator.

Example:

Think: Find the LCD for 4 and 6.

$$\frac{1}{4}, \frac{5}{6}$$

4		4	8	**12**
6		6	**12**	

Write: Both fractions in twelfths.

$$\frac{1}{4} = \frac{3}{12} \qquad \frac{5}{6} = \frac{10}{12} \qquad \frac{3}{12}, \frac{10}{12}$$

---

1) $\frac{5}{8}, \frac{2}{6}$

2) $\frac{1}{3}, \frac{1}{5}$

3) $\frac{3}{4}, \frac{5}{8}$

4) $\frac{3}{8}, \frac{1}{10}$

5) $\frac{1}{2}, \frac{3}{5}$

6) $\frac{3}{4}, \frac{7}{10}$

7) $\frac{3}{6}, \frac{1}{8}$

8) $\frac{3}{10}, \frac{5}{12}$

9) $\frac{5}{6}, \frac{3}{4}$

10) $\frac{2}{7}, \frac{2}{3}$

11) $\frac{13}{15}, \frac{11}{12}$

12) $\frac{1}{3}, \frac{5}{9}$

13) $\frac{17}{21}, \frac{3}{7}$

14) $\frac{1}{6}, \frac{2}{9}$

15) $\frac{1}{4}, \frac{5}{18}$

16) $\frac{2}{9}, \frac{1}{10}$

FORMATIVE TEST

A. Rename the fractions to have the same denominator.

1) $\frac{5}{12}, \frac{4}{9}$

2) $\frac{15}{16}, \frac{7}{8}$

3) $\frac{5}{6}, \frac{9}{10}$

4) $\frac{1}{5}, \frac{1}{6}$

5) $\frac{5}{9}, \frac{7}{12}$

6) $\frac{1}{4}, \frac{1}{6}$

7) $\frac{11}{12}, \frac{7}{8}$

8) $\frac{3}{5}, \frac{3}{10}$

9) $\frac{3}{8}, \frac{2}{5}$

10) $\frac{4}{9}, \frac{8}{15}$

B. Rename the fractions to have the same denominator.

1) $\frac{11}{15}, \frac{3}{4}$

2) $\frac{9}{10}, \frac{7}{12}$

3) $\frac{5}{12}, \frac{9}{16}$

4) $\frac{11}{14}, \frac{5}{7}$

5) $\frac{4}{9}, \frac{13}{21}$

6) $\frac{1}{6}, \frac{5}{16}$

7) $\frac{1}{2}, \frac{4}{5}$

8) $\frac{5}{8}, \frac{7}{18}$

9) $\frac{3}{4}, \frac{9}{14}$

10) $\frac{1}{3}, \frac{2}{9}$

UNIT 11: ADDING FRACTIONS WITH UNLIKE DENOMINATORS

GUIDEPAGE

GOAL: To learn to do problems like

$$\begin{array}{r} \frac{1}{6} \\ + \frac{1}{2} \\ \hline \end{array}$$

STEP 1. FIND THE LCD (THE LEAST COMMON DENOMINATOR).

6   **6** 12

2   2   4 **6**

Think: The LCD is **6**.

$$\begin{array}{r} \frac{1}{6} \\ + \frac{1}{2} \\ \hline \end{array}$$

STEP 2. RENAME THE FRACTIONS SO THAT THEY HAVE THE SAME DENOMINATOR.

Think: $\frac{1}{2} \times \frac{3}{3} = \frac{3}{6}$

$$\begin{array}{rcl} \frac{1}{6} & = & \frac{1}{6} \\ + \frac{1}{2} & = & \frac{3}{6} \\ \hline \end{array}$$

STEP 3. ADD THE RENAMED FRACTIONS.

$$\begin{array}{rcl} \frac{1}{6} & = & \frac{1}{6} \\ + \frac{1}{2} & = & \frac{3}{6} \\ \hline & & \frac{4}{6} \end{array}$$

STEP 4. SIMPLIFY THE SUM.

Think: $\frac{4}{6} \div \frac{2}{2} = \frac{2}{3}$

$$\begin{array}{rcl} \frac{1}{6} & = & \frac{1}{6} \\ + \frac{1}{2} & = & \frac{3}{6} \\ \hline & & \frac{4}{6} = \frac{2}{3} \end{array}$$

SKILL PRACTICE 1

DIRECTIONS: Rename the fractions using the least common denominator.

Example:

First, find the LCD.

$$4 \quad\quad 4 \quad 8 \quad \mathbf{12}$$
$$12 \quad 12 \quad\quad\quad \mathbf{12} \text{ is the LCD.}$$

$$\frac{1}{4} = \frac{3}{12}$$
$$+ \frac{1}{12} = \frac{1}{12}$$

Then, rewrite the fractions.

$$\frac{1}{4} \times \frac{3}{3} = \frac{3}{12} \quad\quad \frac{1}{12} = \frac{1}{12}$$

---

1) $\frac{1}{2} =$

$+ \frac{1}{3} =$

2) $\frac{3}{10} =$

$+ \frac{1}{5} =$

3) $\frac{1}{3} =$

$+ \frac{5}{9} =$

4) $\frac{2}{7} =$

$+ \frac{2}{3} =$

5) $\frac{4}{15} =$

$+ \frac{1}{12} =$

6) $\frac{2}{5} =$

$+ \frac{1}{6} =$

7) $\frac{5}{12} =$

$+ \frac{1}{4} =$

8) $\frac{3}{7} =$

$+ \frac{2}{9} =$

9) $\frac{6}{13} =$

$+ \frac{1}{2} =$

10) $\frac{2}{5} =$

$+ \frac{3}{7} =$

11) $\frac{5}{8} =$

$+ \frac{1}{4} =$

12) $\frac{4}{9} =$

$+ \frac{5}{12} =$

13) $\frac{1}{5} =$

$+ \frac{1}{3} =$

14) $\frac{3}{8} =$

$+ \frac{1}{10} =$

15) $\frac{5}{6} =$

$+ \frac{1}{12} =$

16) $\frac{3}{4} =$

$+ \frac{1}{9} =$

SKILL PRACTICE 2

DIRECTIONS: Add. Simplify if necessary.

Example:

Add.

$$\frac{3}{12} + \frac{1}{12} = \frac{4}{12}$$

Simplify.

$$\frac{4}{12} \div \frac{4}{4} = \frac{1}{3}$$

$$\frac{1}{4} = \frac{3}{12}$$
$$+ \frac{1}{12} = \frac{1}{12}$$
$$\frac{4}{12} = \frac{1}{3}$$

---

1) $\frac{1}{2} = \frac{3}{6}$
$+ \frac{1}{3} = \frac{2}{6}$

2) $\frac{3}{10} = \frac{3}{10}$
$+ \frac{1}{5} = \frac{2}{10}$

3) $\frac{1}{3} = \frac{3}{9}$
$+ \frac{5}{9} = \frac{5}{9}$

4) $\frac{2}{7} = \frac{6}{21}$
$+ \frac{2}{3} = \frac{14}{21}$

5) $\frac{4}{15} = \frac{16}{60}$
$+ \frac{1}{12} = \frac{5}{60}$

6) $\frac{2}{5} = \frac{12}{30}$
$+ \frac{1}{6} = \frac{5}{30}$

7) $\frac{5}{12} = \frac{5}{12}$
$+ \frac{1}{4} = \frac{3}{12}$

8) $\frac{3}{7} = \frac{27}{63}$
$+ \frac{2}{9} = \frac{14}{63}$

9) $\frac{6}{13} = \frac{12}{26}$
$+ \frac{1}{2} = \frac{13}{26}$

10) $\frac{2}{5} = \frac{14}{35}$
$+ \frac{3}{7} = \frac{15}{35}$

11) $\frac{5}{8} = \frac{5}{8}$
$+ \frac{1}{4} = \frac{2}{8}$

12) $\frac{4}{9} = \frac{16}{36}$
$+ \frac{5}{12} = \frac{15}{36}$

13) $\frac{1}{5} = \frac{3}{15}$
$+ \frac{1}{3} = \frac{5}{15}$

14) $\frac{3}{8} = \frac{15}{40}$
$+ \frac{1}{10} = \frac{4}{40}$

15) $\frac{5}{6} = \frac{10}{12}$
$+ \frac{1}{12} = \frac{1}{12}$

16) $\frac{3}{4} = \frac{27}{36}$
$+ \frac{1}{9} = \frac{4}{36}$

SKILL PRACTICE 3

DIRECTIONS: Rename the fractions using the least common denominator and then add. Simplify if necessary.

Example:

Find the LCD for $\frac{1}{10}$ and $\frac{5}{6}$.   LCD is **30**. $\frac{1}{10} = \frac{3}{30}$

Rewrite the fractions. $\frac{1}{10} = \frac{3}{30}$ $\frac{5}{6} = \frac{25}{30}$ $+ \frac{5}{6} = \frac{25}{30}$

Add. $\frac{3}{30} + \frac{25}{30} = \frac{28}{30}$ $\qquad\qquad\qquad \frac{28}{30} = \frac{14}{15}$

Simplify. $\frac{28 \div 2}{30 \div 2} = \frac{14}{15}$

---

1) $\frac{1}{6} =$

  $+ \frac{3}{8} =$

2) $\frac{1}{2} =$

  $+ \frac{1}{7} =$

3) $\frac{2}{3} =$

  $+ \frac{1}{6} =$

4) $\frac{2}{5} =$

  $+ \frac{1}{3} =$

5) $\frac{3}{10} =$

  $+ \frac{7}{15} =$

6) $\frac{5}{8} =$

  $+ \frac{1}{4} =$

7) $\frac{3}{10} =$

  $+ \frac{2}{5} =$

8) $\frac{1}{3} =$

  $+ \frac{8}{15} =$

9) $\frac{1}{2} =$

  $+ \frac{4}{9} =$

10) $\frac{2}{7} =$

  $+ \frac{2}{3} =$

11) $\frac{3}{8} =$

  $+ \frac{2}{5} =$

12) $\frac{1}{10} =$

  $+ \frac{1}{2} =$

13) $\frac{3}{4} =$

  $+ \frac{1}{12} =$

14) $\frac{1}{2} =$

  $+ \frac{1}{3} =$

15) $\frac{5}{16} =$

  $+ \frac{3}{8} =$

16) $\frac{5}{12} =$

  $+ \frac{4}{15} =$

FORMATIVE TEST

A. Add. Simplify if needed.

1) $\frac{1}{3} =$
$+ \frac{3}{5} =$
_____

2) $\frac{7}{15} =$
$+ \frac{1}{10} =$
_____

3) $\frac{1}{3} =$
$+ \frac{7}{12} =$
_____

4) $\frac{2}{3} =$
$+ \frac{1}{6} =$
_____

5) $\frac{1}{2} =$
$+ \frac{3}{8} =$
_____

6) $\frac{4}{7} =$
$+ \frac{1}{3} =$
_____

7) $\frac{2}{5} =$
$+ \frac{1}{6} =$
_____

8) $\frac{3}{4} =$
$+ \frac{1}{10} =$
_____

9) $\frac{2}{9} =$
$+ \frac{1}{3} =$
_____

10) $\frac{1}{3} =$
$+ \frac{1}{2} =$
_____

B. Add. Simplify if needed.

1) $\frac{3}{8} =$
$+ \frac{3}{16} =$
_____

2) $\frac{2}{3} =$
$+ \frac{1}{4} =$
_____

3) $\frac{11}{15} =$
$+ \frac{1}{12} =$
_____

4) $\frac{1}{6} =$
$+ \frac{1}{4} =$
_____

5) $\frac{5}{14} =$
$+ \frac{3}{7} =$
_____

6) $\frac{1}{2} =$
$+ \frac{2}{5} =$
_____

7) $\frac{5}{6} =$
$+ \frac{2}{15} =$
_____

8) $\frac{9}{20} =$
$+ \frac{3}{10} =$
_____

9) $\frac{1}{2} =$
$+ \frac{2}{9} =$
_____

10) $\frac{1}{3} =$
$+ \frac{1}{6} =$
_____

UNIT 12: Subtracting Fractions with Unlike Denominators

GUIDEPAGE

GOAL: To learn to do problems like

$$\frac{3}{4}$$
$$-\frac{1}{3}$$

STEP 1. RENAME THE FRACTIONS SO THAT THEY HAVE THE SAME DENOMINATOR.

Think: Find the LCD.

| 4 | 4 | 8 | **12** | LCD is **12**. | $\frac{3}{4}$ | = | $\frac{9}{12}$ |
| 3 | 3 | 6 | 9 | **12** |

$-\frac{1}{3}$ = $\frac{4}{12}$

Rename the fractions.

$$\frac{3}{4} \times \frac{3}{3} = \frac{9}{12} \qquad \frac{1}{3} \times \frac{4}{4} = \frac{4}{12}$$

STEP 2. SUBTRACT.

$$\frac{3}{4} = \frac{9}{12}$$
$$-\frac{1}{3} = \frac{4}{12}$$
$$\frac{5}{12}$$

Think: $\frac{9}{12} - \frac{4}{12} = \frac{5}{12}$

STEP 3. SIMPLIFY.

Think: There are no common factors in 5 and 12.

$\frac{5}{12}$ cannot be simplified.

$$\frac{3}{4} = \frac{9}{12}$$
$$-\frac{1}{3} = \frac{4}{12}$$
$$\frac{5}{12}$$

SKILL PRACTICE 1

DIRECTIONS: Rename the fractions using the least common denominator (LCD).

Example:

    Think: Find the LCD for $\frac{1}{4}$ and $\frac{1}{12}$.

           LCD is **12**.

           Rename $\frac{1}{4}$.

$$\frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$$

$$\frac{1}{4} = \frac{3}{12}$$
$$-\frac{1}{12} = \frac{1}{12}$$

---

1) $\frac{2}{3} =$
   $-\frac{1}{6} =$

2) $\frac{3}{10} =$
   $-\frac{1}{5} =$

3) $\frac{11}{12} =$
   $-\frac{1}{4} =$

4) $\frac{5}{9} =$
   $-\frac{2}{6} =$

5) $\frac{1}{3} =$
   $-\frac{2}{7} =$

6) $\frac{8}{15} =$
   $-\frac{1}{5} =$

7) $\frac{2}{3} =$
   $-\frac{3}{5} =$

8) $\frac{3}{4} =$
   $-\frac{1}{6} =$

9) $\frac{1}{2} =$
   $-\frac{1}{5} =$

10) $\frac{3}{4} =$
    $-\frac{5}{8} =$

11) $\frac{1}{2} =$
    $-\frac{1}{4} =$

12) $\frac{5}{6} =$
    $-\frac{1}{8} =$

13) $\frac{7}{10} =$
    $-\frac{4}{15} =$

14) $\frac{7}{8} =$
    $-\frac{2}{5} =$

15) $\frac{1}{4} =$
    $-\frac{1}{5} =$

16) $\frac{14}{15} =$
    $-\frac{2}{3} =$

SKILL PRACTICE 2

DIRECTIONS: Rename the fractions to have like denominators. Then subtract. Simplify the difference if necessary.

Example:

Subtract.

$$\frac{3}{12} - \frac{1}{12} = \frac{2}{12}$$

Simplify.

$$\frac{2}{12} = \frac{1}{6}$$

$$\frac{1}{4} = \frac{3}{12}$$
$$-\frac{1}{12} = \frac{1}{12}$$
$$\overline{\qquad\qquad}$$
$$\frac{2}{12} = \frac{1}{6}$$

---

1) $\frac{2}{3} = \frac{4}{6}$
  $-\frac{1}{6} = \frac{1}{6}$

2) $\frac{3}{10} = \frac{3}{10}$
  $-\frac{1}{5} = \frac{2}{10}$

3) $\frac{11}{12} = \frac{11}{12}$
  $-\frac{1}{4} = \frac{3}{12}$

4) $\frac{5}{9} = \frac{10}{18}$
  $-\frac{2}{6} = \frac{6}{18}$

5) $\frac{1}{3} = \frac{7}{21}$
  $-\frac{2}{7} = \frac{6}{21}$

6) $\frac{8}{15} = \frac{8}{15}$
  $-\frac{1}{5} = \frac{3}{15}$

7) $\frac{2}{3} = \frac{10}{15}$
  $-\frac{3}{5} = \frac{9}{15}$

8) $\frac{3}{4} = \frac{9}{12}$
  $-\frac{1}{6} = \frac{2}{12}$

9) $\frac{1}{2} = \frac{5}{10}$
  $-\frac{1}{5} = \frac{2}{10}$

10) $\frac{3}{4} = \frac{6}{8}$
  $-\frac{5}{8} = \frac{5}{8}$

11) $\frac{1}{2} = \frac{2}{4}$
  $-\frac{1}{4} = \frac{1}{4}$

12) $\frac{5}{6} = \frac{20}{24}$
  $-\frac{1}{8} = \frac{3}{24}$

13) $\frac{7}{10} = \frac{21}{30}$
  $-\frac{4}{15} = \frac{8}{30}$

14) $\frac{7}{8} = \frac{35}{40}$
  $-\frac{2}{5} = \frac{16}{40}$

15) $\frac{1}{4} = \frac{5}{20}$
  $-\frac{1}{5} = \frac{4}{20}$

16) $\frac{14}{15} = \frac{14}{15}$
  $-\frac{2}{3} = \frac{10}{15}$

SKILL PRACTICE 3

DIRECTIONS: Subtract. Simplify the difference if necessary.

Example:

   Think: Find the LCD and rename the fractions.
Subtract.
Simplify.

$$\frac{5}{6} = \frac{25}{30}$$
$$-\frac{3}{10} = \frac{9}{30}$$
$$\frac{16}{30} = \frac{8}{15}$$

1) $\frac{5}{6} =$

$-\frac{4}{9} =$

2) $\frac{2}{5} =$

$-\frac{3}{10} =$

3) $\frac{7}{10} =$

$-\frac{7}{15} =$

4) $\frac{2}{3} =$

$-\frac{1}{6} =$

5) $\frac{4}{5} =$

$-\frac{1}{2} =$

6) $\frac{3}{8} =$

$-\frac{1}{6} =$

7) $\frac{3}{4} =$

$-\frac{1}{7} =$

8) $\frac{2}{5} =$

$-\frac{1}{3} =$

9) $\frac{5}{8} =$

$-\frac{1}{4} =$

10) $\frac{5}{9} =$

$-\frac{1}{2} =$

11) $\frac{8}{15} =$

$-\frac{1}{3} =$

12) $\frac{5}{8} =$

$-\frac{3}{5} =$

13) $\frac{2}{3} =$

$-\frac{1}{2} =$

14) $\frac{5}{6} =$

$-\frac{1}{10} =$

15) $\frac{5}{12} =$

$-\frac{4}{15} =$

16) $\frac{3}{8} =$

$-\frac{5}{16} =$

FORMATIVE TEST

A. Subtract. Simplify the difference if necessary.

1) $\dfrac{1}{3}$
$-\dfrac{1}{6}$

2) $\dfrac{9}{20}$
$-\dfrac{3}{10}$

3) $\dfrac{1}{2}$
$-\dfrac{2}{5}$

4) $\dfrac{5}{6}$
$-\dfrac{1}{4}$

5) $\dfrac{3}{4}$
$-\dfrac{2}{3}$

6) $\dfrac{3}{8}$
$-\dfrac{1}{16}$

7) $\dfrac{11}{15}$
$-\dfrac{1}{12}$

8) $\dfrac{9}{14}$
$-\dfrac{3}{7}$

9) $\dfrac{5}{6}$
$-\dfrac{4}{15}$

10) $\dfrac{7}{9}$
$-\dfrac{1}{2}$

B. Subtract. Simplify the difference if necessary.

1) $\dfrac{1}{2}$
$-\dfrac{1}{3}$

2) $\dfrac{3}{4}$
$-\dfrac{7}{10}$

3) $\dfrac{5}{7}$
$-\dfrac{1}{3}$

4) $\dfrac{7}{9}$
$-\dfrac{1}{6}$

5) $\dfrac{7}{15}$
$-\dfrac{3}{10}$

6) $\dfrac{4}{5}$
$-\dfrac{1}{3}$

7) $\dfrac{7}{12}$
$-\dfrac{1}{6}$

8) $\dfrac{5}{8}$
$-\dfrac{1}{2}$

9) $\dfrac{2}{5}$
$-\dfrac{1}{6}$

10) $\dfrac{2}{3}$
$-\dfrac{2}{9}$

UNIT 13: WORD PROBLEMS – COMPARING FRACTIONS

GUIDEPAGE

GOAL: To learn to do problems like

Which number is larger? $\frac{4}{5}$ or $\frac{6}{10}$

STEP 1.   COMPARE NUMERATORS AND DENOMINATORS.

Think: When the numerators and denominators are different, rename the fractions using a common denominator.

Find the LCD.

$$\begin{matrix} 5 \\ 10 \end{matrix} \quad \begin{matrix} 5, \ \mathbf{10} \\ \mathbf{10} \end{matrix} \qquad LCD = \mathbf{10}$$

Rename. $\frac{4}{5} = \frac{8}{10}$

STEP 2.   COMPARE THE FRACTIONS.

Think: When the denominators are the same, compare the numerators. $\frac{4}{5} = \frac{8}{10}$ or $\frac{6}{10}$

8 is more than 6.

Write: $\frac{4}{5}$ **is larger than** $\frac{6}{10}$

REMINDER

When the numerators and denominators are different, rename the fractions using a common denominator.

When the denominators are the same, compare the numerators.

SKILL PRACTICE 1

DIRECTIONS: Solve the following problems.
Write all answers in simplest form.

1. Two boys were arguing as to whose seedlings had grown the most during a science experiment. Chris reported that his seedling was $5/8$ inch and Danny reported his seedling to be $11/16$ inch. Which boy's seedling was taller?

2. Anita ate $3/8$ of a pie. Jennifer ate $3/6$ of the pie. Who ate more?

3. Ann and Kim were painting their rooms. Ann was $4/5$ finished, Kim was $9/10$ finished. Who was closer to being finished?

4. Paul spelled $2/3$ of the weekly spelling words correctly. JoAnn spelled $3/4$ of the weekly spelling words correctly. Who had the highest grade?

5. David read $4/5$ of a book on Wednesday and $3/7$ of the book on Thursday. Which day did David read more?

6. Your teacher gave you an extra recess of $1/2$ an hour last Friday. This Friday she promised you an extra recess of $3/8$ an hour. Would you be happier with $1/2$ an hour or $3/8$ an hour of extra recess?

7. Patti read $\frac{3}{4}$ of a book. Her friend read $\frac{6}{7}$ of the same book. Who read more?

8. Nancy spent $\frac{3}{8}$ of her allowance on Saturday and $\frac{4}{24}$ of it on Sunday. Which day did Nancy spend less of her allowance?

9. Jack grew $\frac{3}{4}$ of a foot last year. This year Jack grew $\frac{7}{8}$ of a foot. Which year did Jack grow the most, last year or this year?

10. Beth walks $\frac{4}{7}$ of a mile to school. Steve walks $\frac{5}{9}$ of a mile. Who walks farther?

11. Your classroom was painted $\frac{3}{8}$ purple and $\frac{6}{11}$ yellow. Is there more purple or yellow in your classroom?

12. Billy missed $\frac{2}{25}$ of the questions on a social studies quiz. On the next quiz he missed $\frac{3}{30}$ of the questions. Which score is Billy's best?

FORMATIVE TEST A

Solve the following problems.

1. Sammy missed $9/12$ of the questions on the first science quiz. On the second quiz he missed $4/24$ of the questions. On which quiz did Sammy score the highest?

2. Sara is on a diet. Should she eat $1/8$ of a cake or $1/12$ of it?

3. Peggy walks $2/28$ of a mile to school. Eddie walks $3/7$ of a mile. Who walks farther?

4. Doug grew $6/8$ of a foot last year. This year Doug grew $9/48$ of a foot. Which year did Doug grow the most, last year or this year?

5. Melissa spent $1/2$ of her allowance on Saturday and $22/48$ of it on Sunday. Which day did Melissa spend *less* of her allowance?

FORMATIVE TEST B

Solve the following problems.

1. Bruce read $\frac{3}{8}$ of a book on Wednesday and $\frac{1}{4}$ of the book on Thursday. Which day did Bruce read more?

2. Carroll and Glenn were eating roast beef T.V. dinners. Carroll ate $\frac{7}{15}$ of hers and Glenn ate $\frac{50}{60}$ of his. Who ate more?

3. Last week we saw a puppet show that lasted $\frac{2}{3}$ of an hour. This week we saw a film on how to make puppets that lasted $\frac{4}{10}$ of an hour. Which activity took the most time, the puppet show or the film?

4. Dan is painting a picture and has $\frac{2}{6}$ left to paint. Charles is also painting a picture and has $\frac{1}{4}$ left to paint. Who has the most left to paint, Dan or Charles?

5. Dad picked $\frac{4}{11}$ of a bushel of apples. Aunt Gloria picked $\frac{15}{44}$ of a bushel of apples. Who picked more apples, Dad or Aunt Gloria?

UNIT 14: ADDING AND SUBTRACTING FRACTIONS

GUIDEPAGE

GOAL: To learn to add and subtract fractions.

Example 1: ADDING FRACTIONS WITH LIKE DENOMINATORS.

Paul ate $\frac{3}{6}$ of an apple pie.

Bruce ate $\frac{1}{6}$ of an apple pie.

How much did they eat in all?

Think: The denominators are the same.

$$\frac{3}{6} + \frac{1}{6} = \frac{4}{6}$$

Reduce. $\frac{4}{6} \div \frac{2}{2} = \frac{2}{3}$ $\frac{4}{6} = \frac{2}{3}$

Write: They ate $\frac{2}{3}$ of an apple pie.

Example 2: SUBTRACTING FRACTIONS WITH LIKE DENOMINATORS.

Left on the plate is $\frac{7}{8}$ of a pie.

Harold eats $\frac{5}{8}$ of the pie.

How much pie remains?

Think: The denominators are the same. Subtract the numerators.

$$\frac{7}{8} - \frac{5}{8} = \frac{2}{8}$$

Reduce. $\frac{2}{8} \div \frac{2}{2} = \frac{1}{4}$ $\frac{2}{8} = \frac{1}{4}$

Write: $\frac{1}{4}$ of a pie remains.

Example 3:   ADDING WITH UNLIKE DENOMINATORS.

Think: Find the least common denominator.

$$\frac{2}{3} + \frac{5}{15} = ?$$

3   3,   6,   9,   12, **15**

15   **15**

Rename the fractions.

$$\frac{2}{3} = \frac{10}{15}$$

$$+ \frac{5}{15} = \frac{5}{15}$$

Add and reduce.

$$\frac{15}{15} = 1$$

Example 4:   SUBTRACTING WITH UNLIKE DENOMINATORS.

Think: Find the least common denominator.

$$\frac{7}{10} = \frac{7}{10}$$

Rename.

$$- \frac{1}{5} = \frac{2}{10}$$

Subtract and reduce.

$$\frac{5}{10} = \frac{1}{2}$$

SKILL PRACTICE 1

DIRECTIONS: Solve the following problems.
Write all answers in simplest form.

1. Gabriel plays $\frac{1}{3}$ of his day and sleeps $\frac{1}{6}$ of his day. What part of his day does he play and sleep?

2. Three students wrapped birthday presents. Stefanie used $\frac{2}{8}$ of the roll of gift wrap, Maggie used $\frac{1}{4}$ of the roll, and Bobby used $\frac{1}{2}$ of the roll of paper. How much gift wrap was left?

3. Cary had $\frac{5}{6}$ yard of string. She used $\frac{1}{3}$ yard to tie a box. How much string did she have left?

4. A painter painted your bedroom. She had $\frac{3}{4}$ gallon of blue and used $\frac{3}{8}$ gallon. How much is left?

5. It took $\frac{5}{6}$ of a day to paint the kitchen and $\frac{1}{3}$ of a day to paint your room. How much longer did the kitchen take to paint?

6. Carlos hiked $\frac{1}{2}$ mile Saturday morning to look for his puppy. Saturday afternoon the puppy ran away again! Carlos hiked $\frac{1}{3}$ mile to find him. How far did Carlos hike to look for his puppy on Saturday?

7. Robbie made cookies for dessert. The recipe called for $\frac{1}{3}$ cup chocolate chips. Robbie ate $\frac{1}{2}$ cup chocolate chips before baking the cookies. How many chocolate chips did Robbie use in all?

8. Lee grew $\frac{1}{10}$ of a yard last year and $\frac{1}{5}$ of a yard this year. How much did she grow during these two years?

9. Maria had $\frac{2}{3}$ of a dozen ice cream cones. She ate $\frac{1}{4}$ of the dozen ice cream cones all by herself. What part of a dozen does she have left?

10. The cake called for $\frac{2}{3}$ of a cup of sugar. The frosting called for $\frac{6}{10}$ of a cup of sugar. How much more sugar was used in the frosting?

11. Jerry's belt was $\frac{1}{2}$ yard long. Carol's belt was $\frac{3}{5}$ yard long. What is the difference between the belts' lengths?

12. Steve's shoe weighs $\frac{2}{10}$ pound. Rick's shoe weighs $\frac{3}{5}$ pound. How much did the two shoes weigh together?

FORMATIVE TEST A

Solve the following problems. Write all answers in simplest form.

1. Peter walked $7/27$ of a mile home from the drugstore, then $5/9$ of a mile to his friend's house. How far did he walk in all?

2. Last week it rained $5/6$ of an inch. This week it rained $7/9$ of an inch. How much did it rain during these two weeks?

3. Marco finished $5/9$ of his classwork in the morning and $1/18$ of it in the afternoon. How much classwork wasn't finished?

4. Joe's big toe weighs $8/15$ of a pound. Donna's big toe weighs $4/60$ of a pound. How much do the two toes weigh together?

5. Ralph's shoe was $5/8$ of a foot long. Craig's shoe was $5/9$ of a foot long. What is the difference between the shoes?

FORMATIVE TEST B

Solve the following problems. Write all answers in simplest form.

1. Marcellus grew $^{11}/_{12}$ of an inch last month and $^1/_2$ of an inch this month. How much did he grow during these two months?

2. The soup called for $^9/_{36}$ cup of noodles. The spaghetti called for $^1/_9$ cup of noodles. How many more noodles were used in the soup?

3. Elva had $^7/_8$ of a dozen popsicles. She ate $^1/_4$ of the dozen popsicles all by herself. What part of a dozen does she have left?

4. Nancy picked strawberries. She ate $^5/_{21}$ of a pound while she was picking and brought home $^1/_3$ of a pound. How many strawberries did Nancy pick?

5. Walter practiced gymnastics for $^8/_{32}$ of an hour. Then he practiced piano for $^1/_8$ of an hour. How much more time did Walter practice gymnastics?

INTERMEDIATE FRACTIONS
TAI – Team Accelerated Instruction

STUDENT BOOK

ANSWERS

REVIEW ANSWERS

Skill Pr. 1

1) $\frac{2}{3}$ 9) $\frac{4}{9}$

2) $\frac{3}{7}$ 10) $\frac{2}{3}$

3) $\frac{3}{4}$ 11) $\frac{4}{7}$

4) $\frac{5}{6}$ 12) $\frac{3}{5}$

5) $\frac{2}{5}$ 13) $\frac{4}{8}$

6) $\frac{5}{8}$ 14) $\frac{4}{5}$

7) $\frac{2}{4}$ 15) $\frac{3}{6}$

8) $\frac{2}{6}$ 16) $\frac{4}{5}$

Skill Pr. 2

1) $<$ 9) $>$

2) $>$ 10) $>$

3) $>$ 11) $<$

4) $<$ 12) $<$

5) $<$ 13) $>$

6) $>$ 14) $<$

7) $>$ 15) $>$

8) $>$ 16) $<$

Skill Pr. 3

1) $\frac{7}{8}$ 9) $\frac{8}{9}$

2) $\frac{3}{6}$ 10) $\frac{2}{7}$

3) $\frac{5}{6}$ 11) $\frac{7}{10}$

4) $\frac{1}{7}$ 12) $\frac{4}{8}$

5) $\frac{3}{5}$ 13) $\frac{3}{3}$

6) $\frac{2}{5}$ 14) $\frac{7}{12}$

7) $\frac{6}{9}$ 15) $\frac{4}{5}$

8) $\frac{2}{4}$ 16) $\frac{2}{6}$

Formative Test A

1) $3\frac{2}{4} = 3\frac{1}{2}$ 6) $<$

2) $5\frac{2}{3}$ 7) $\frac{13}{15}$

3) $<$ 8) $6\frac{17}{60}$

4) $<$ 9) $10\frac{4}{15}$

5) $>$ 10) $9\frac{2}{30} = 9\frac{1}{15}$

Formative Test B

1) $\frac{2}{6} = \frac{1}{3}$ 6) $<$

2) $3\frac{2}{3}$ 7) $\frac{31}{50}$

3) $>$ 8) $2\frac{13}{15}$

4) $<$ 9) $14\frac{1}{8}$

5) $<$ 10) $1\frac{6}{16} = 1\frac{3}{8}$

UNIT 1 ANSWERS

Skill Pr. 1

1) $\frac{4}{10}$

2) $\frac{3}{6}$

3) $\frac{4}{4}$

4) $\frac{6}{9}$

5) $\frac{3}{3}$

6) $\frac{4}{6}$

7) $\frac{6}{8}$

8) $\frac{8}{10}$

9) $\frac{4}{8}$

10) $\frac{10}{10}$

11) $\frac{3}{9}$

12) $\frac{6}{10}$

13) $\frac{4}{6}$

14) $\frac{2}{6}$

15) $\frac{9}{9}$

16) $\frac{2}{10}$

Skill Pr. 2

1) $\frac{8}{10}$

2) $\frac{3}{12}$

3) $\frac{12}{24}$

4) $\frac{10}{15}$

5) $\frac{4}{8}$

6) $\frac{6}{36}$

7) $\frac{8}{12}$

8) $\frac{3}{15}$

9) $\frac{5}{15}$

10) $\frac{7}{14}$

11) $\frac{6}{24}$

12) $\frac{4}{6}$

13) $\frac{9}{12}$

14) $\frac{4}{24}$

15) $\frac{5}{35}$

16) $\frac{12}{30}$

UNIT 1 ANSWERS

Skill Pr. 3

1) $\frac{2}{2}$

2) $\frac{5}{5}$

3) $\frac{4}{4}$

4) $\frac{3}{3}$

5) $\frac{3}{3}$

6) $\frac{4}{4}$

7) $\frac{6}{6}$

8) $\frac{2}{2}$

9) $\frac{3}{3}$

10) $\frac{4}{4}$

11) $\frac{2}{2}$

12) $\frac{5}{5}$

13) $\frac{3}{3}$

14) $\frac{4}{4}$

15) $\frac{2}{2}$

16) $\frac{5}{5}$

Skill Pr. 4

1) $\frac{6}{9}$

2) $\frac{4}{16}$

3) $\frac{2}{10}$

4) $\frac{15}{20}$

5) $\frac{2}{12}$

6) $\frac{9}{15}$

7) $\frac{8}{12}$

8) $\frac{3}{21}$

9) $\frac{6}{18}$

10) $\frac{10}{12}$

11) $\frac{9}{18}$

12) $\frac{4}{16}$

13) $\frac{2}{6}$

14) $\frac{6}{12}$

15) $\frac{10}{25}$

16) $\frac{6}{12}$

Formative Test A

1) $\frac{4}{16}$

2) $\frac{6}{15}$

3) $\frac{8}{14}$

4) $\frac{10}{20}$

5) $\frac{12}{18}$

6) $\frac{9}{24}$

7) $\frac{15}{20}$

8) $\frac{8}{12}$

9) $\frac{5}{15}$

10) $\frac{4}{8}$

Formative Test B

1) $\frac{3}{9}$

2) $\frac{14}{16}$

3) $\frac{8}{24}$

4) $\frac{9}{21}$

5) $\frac{24}{30}$

6) $\frac{6}{8}$

7) $\frac{20}{30}$

8) $\frac{8}{20}$

9) $\frac{3}{12}$

10) $\frac{2}{14}$

UNIT 2 ANSWERS

Skill Pr. 1
1) 1
2) 3
3) 8
4) 4
5) 6
6) 2
7) 5
8) 9
9) 7
10) 8
11) 7
12) 3
13) 2
14) 5
15) 6
16) 1

Skill Pr. 2
1) 1, 12, 6, 2, 3, 4
2) 1, 11
3) 9, 2, 6, 3, 1, 18
4) 3, 9, 1
5) 2, 4, 1, 8
6) 12, 2, 8, 3, 6, 4, 24, 1
7) 5, 3, 1, 15
8) 7, 3, 1, 21
9) 3, 12, 36, 1, 9, 4, 6, 2, 18
10) 1, 17
11) 4, 16, 1, 8, 2
12) 2, 3, 6, 1
13) 1, 28, 2, 14, 7, 4
14) 1, 14, 2, 7
15) 11, 2, 1, 22
16) 3, 11, 1, 33

UNIT 2 ANSWERS

Skill Pr. 3

1) 1, 2, 3, 4, 6, 12
2) 1, 11
3) 1, 2, 3, 6, 9, 18
4) 1, 3, 9
5) 1, 2, 4, 8
6) 1, 2, 3, 4, 6, 8, 12, 24
7) 1, 3, 5, 15
8) 1, 3, 7, 21
9) 1, 2, 3, 4, 6, 9, 12, 18, 36
10) 1, 17
11) 1, 2, 4, 8, 16
12) 1, 2, 3, 6
13) 1, 2, 4, 7, 14, 28
14) 1, 2, 7, 14
15) 1, 2, 11, 22
16) 1, 3, 11, 33

Skill Pr. 4

1) 1, 2, 7, 14
2) 1, 2, 3, 4, 6, 9, 12, 18, 36
3) 1, 2, 3, 4, 6, 12
4) 1, 5
5) 1, 3, 9
6) 1, 2, 4, 5, 10, 20
7) 1, 11
8) 1, 2, 3, 6, 9, 18
9) 1, 2, 3, 5, 6, 10, 15, 30
10) 1, 2, 4, 8
11) 1, 17
12) 1, 3, 5, 15
13) 1, 2, 3, 4, 6, 8, 12, 24
14) 1, 2, 5, 10
15) 1, 13
16) 1, 2, 11, 22

Formative Test A

1) 1, 2, 4, 8, 16
2) 1, 3, 7, 21
3) 1, 2, 4, 8
4) 1, 2, 3, 4, 6, 9, 12, 18, 36
5) 1, 11
6) 1, 29
7) 1, 5, 7, 35
8) 1, 2, 3, 6, 9, 18
9) 1, 17
10) 1, 5, 25

Formative Test B

1) 1, 2, 7, 14
2) 1, 2, 3, 4, 6, 12
3) 1, 3, 9, 27
4) 1, 13
5) 1, 2, 4, 8, 16, 32
6) 1, 3, 5, 15
7) 1, 23
8) 1, 2, 13, 26
9) 1, 19
10) 1, 2, 3, 4, 6, 8, 12, 24

UNIT 3 ANSWERS

Skill Pr. 1

1) 1, 2, 3, 6, 9, 18
2) 1, 2, 4
3) 1, 2, 3, 4, 6, 8, 12, 24
4) 1, 3, 5, 15
5) 1, 23
6) 1, 2, 4, 7, 14, 28
7) 1, 2, 7, 14
8) 1, 2, 3, 4, 6, 9, 12, 18, 36
9) 1, 2, 3, 4, 6, 12,
10) 1, 2, 13, 26
11) 1, 3, 9
12) 1, 3, 7, 21
13) 1, 2, 5, 10
14) 1, 2, 3, 5, 6, 10, 15, 30
15) 1, 19
16) 1, 2, 4, 8, 16

UNIT 3 ANSWERS

Skill Pr. 2

1) 1, 3, 5, 15
   1, 5, 25

2) 1, 3, 11, 33
   1, 2, 11, 22

3) 1, 2, 3, 4, 6, 9, 12, 18, 36
   1, 13

4) 1, 2, 3, 6
   1, 2, 3, 4, 6, 12

5) 1, 2, 3, 6, 9, 18
   1, 3, 9, 27

6) 1, 3, 7, 21
   1, 2, 7, 14

7) 1, 2, 3, 4, 6, 8, 12, 24
   1, 3, 9, 27

8) 1, 2, 3, 4, 6, 12
   1, 2, 4, 8

9) 1, 2, 4, 7, 14, 28
   1, 5, 7, 35

10) 1, 2, 4, 5, 10, 20
    1, 2, 3, 5, 6, 10, 15, 30

11) 1, 2, 3, 4, 6, 9, 12, 18, 36
    1, 2, 4, 8, 16, 32

12) 1, 2, 4, 7, 14, 28
    1, 2, 4, 8, 16, 32

13) 1, 2, 3, 6, 9, 18
    1, 2, 3, 5, 6, 10, 15, 30

14) 1, 2, 5, 10
    1, 2, 3, 4, 6, 8, 12, 24

15) 1, 2, 3, 5, 6, 10, 15, 30
    1, 3, 7, 21

16) 1, 2, 4, 8, 16
    1, 2, 4, 5, 8, 10, 20, 40

7

UNIT 3 ANSWERS

Skill Pr. 3
1) 5
2) 22
3) 13
4) 6
5) 9
6) 5
7) 31
8) 12
9) 21
10) 13
11) 9
12) 4
13) 9
14) 3
15) 6
16) 8

Skill Pr. 4
1) 4
2) 5
3) 4
4) 3
5) 6
6) 7
7) 10
8) 6
9) 7
10) 5
11) 9
12) 2
13) 8
14) 1
15) 11
16) 10

Formative Test A
1) 15
2) 6
3) 1
4) 2
5) 9
6) 8
7) 3
8) 8
9) 2
10) 7

Formative Test B
1) 4
2) 9
3) 8
4) 12
5) 3
6) 5
7) 7
8) 3
9) 3
10) 2

UNIT 4 ANSWERS

Skill Pr. 1

1) 3
2) 2
3) 4
4) 2
5) 5
6) 3
7) 2
8) 3
9) 7
10) 4
11) 3
12) 4
13) 3
14) 5
15) 15
16) 12

Skill Pr. 2

1) $\frac{1}{2}$
2) $\frac{1}{4}$
3) $\frac{1}{5}$
4) $\frac{1}{2}$
5) $\frac{1}{3}$
6) $\frac{1}{4}$
7) $\frac{1}{6}$
8) $\frac{1}{7}$
9) $\frac{1}{7}$
10) $\frac{1}{5}$
11) $\frac{1}{3}$
12) $\frac{1}{6}$
13) $\frac{1}{8}$
14) $\frac{1}{4}$
15) $\frac{1}{5}$
16) $\frac{1}{7}$

UNIT 4 ANSWERS

Skill Pr. 3

1) $\frac{3}{4}$

2) $\frac{5}{7}$

3) $\frac{1}{3}$

4) $\frac{3}{4}$

5) $\frac{1}{3}$

6) $\frac{3}{7}$

7) $\frac{7}{11}$

8) $\frac{3}{4}$

9) $\frac{4}{9}$

10) $\frac{1}{4}$

11) $\frac{2}{3}$

12) $\frac{3}{7}$

13) $\frac{2}{7}$

14) $\frac{4}{5}$

15) $\frac{1}{3}$

16) $\frac{2}{3}$

Skill Pr. 4

1) $\frac{2}{3}$

2) $\frac{1}{3}$

3) $\frac{3}{8}$

4) $\frac{1}{3}$

5) $\frac{1}{5}$

6) $\frac{3}{4}$

7) $\frac{1}{4}$

8) $\frac{2}{3}$

9) $\frac{2}{7}$

10) $\frac{3}{4}$

11) $\frac{1}{3}$

12) $\frac{1}{2}$

13) $\frac{1}{4}$

14) $\frac{1}{3}$

15) $\frac{6}{7}$

16) $\frac{2}{3}$

Formative Test A

1) $\frac{1}{4}$

2) $\frac{2}{3}$

3) $\frac{3}{4}$

4) $\frac{3}{7}$

5) $\frac{1}{3}$

6) $\frac{2}{5}$

7) $\frac{2}{3}$

8) $\frac{1}{6}$

9) $\frac{3}{4}$

10) $\frac{1}{2}$

Formative Test B

1) $\frac{2}{3}$

2) $\frac{2}{3}$

3) $\frac{1}{3}$

4) $\frac{2}{3}$

5) $\frac{1}{3}$

6) $\frac{2}{7}$

7) $\frac{1}{2}$

8) $\frac{3}{8}$

9) $\frac{1}{2}$

10) $\frac{2}{3}$

UNIT 5 ANSWERS

Skill Pr. 1

1) $\frac{6}{8}$

2) $\frac{3}{12}$

3) $\frac{8}{12}$

4) $\frac{3}{8}$

5) $\frac{5}{15}$

6) $\frac{12}{16}$

7) $\frac{5}{10}$

8) $\frac{8}{16}$

9) $\frac{15}{25}$

10) $\frac{7}{7}$

11) $\frac{8}{35}$

12) $\frac{3}{9}$

13) $\frac{4}{10}$

14) $\frac{2}{5}$

15) $\frac{2}{18}$

16) $\frac{15}{60}$

Skill Pr. 2

1) $\frac{1}{3}$

2) $\frac{3}{4}$

3) $\frac{1}{4}$

4) $\frac{9}{10}$

5) $\frac{1}{4}$

6) $\frac{6}{5}$

7) $\frac{2}{3}$

8) $\frac{1}{3}$

9) $\frac{1}{2}$

10) $\frac{1}{3}$

11) $\frac{2}{5}$

12) $\frac{3}{4}$

13) $\frac{5}{7}$

14) $\frac{3}{4}$

15) $\frac{1}{2}$

16) $\frac{4}{5}$

UNIT 5 ANSWERS

Skill Pr. 3

1) $\frac{3}{4}$

9) $\frac{5}{8}$

2) $\frac{1}{3}$

10) $\frac{1}{2}$

3) $\frac{3}{7}$

11) $\frac{7}{9}$

4) $\frac{2}{3}$

12) $\frac{3}{8}$

5) $\frac{2}{5}$

13) $\frac{7}{9}$

6) $\frac{6}{11}$

14) $\frac{7}{16}$

7) $\frac{2}{5}$

15) $\frac{6}{7}$

8) $\frac{3}{4}$

16) $\frac{3}{5}$

Formative Test A

1) $\frac{1}{4}$

6) $\frac{3}{7}$

2) $\frac{3}{7}$

7) $\frac{2}{3}$

3) $\frac{1}{2}$

8) $\frac{5}{8}$

4) $\frac{1}{4}$

9) $\frac{5}{8}$

5) $\frac{2}{7}$

10) $\frac{1}{2}$

Formative Test B

1) $\frac{3}{4}$

6) $\frac{1}{2}$

2) $\frac{3}{4}$

7) $\frac{10}{13}$

3) $\frac{5}{7}$

8) $\frac{1}{2}$

4) $\frac{3}{10}$

9) $\frac{7}{10}$

5) $\frac{1}{3}$

10) $\frac{3}{10}$

UNIT 6 ANSWERS

Skill Pr. 1

1) $3\frac{4}{5}$

2) $4\frac{6}{8}$

3) $5\frac{3}{10}$

4) $14\frac{2}{4}$

5) $3\frac{2}{16}$

6) $7\frac{5}{12}$

7) $23\frac{11}{12}$

8) $8\frac{4}{8}$

9) $1\frac{2}{9}$

10) $20\frac{12}{16}$

11) $2\frac{2}{6}$

12) $21\frac{13}{14}$

13) $12\frac{8}{10}$

14) $3\frac{7}{12}$

15) $15\frac{11}{18}$

16) $9\frac{5}{10}$

Skill Pr. 2

1) $5\frac{1}{3}$

2) $3\frac{4}{9}$

3) $2\frac{2}{3}$

4) $11\frac{3}{4}$

5) $10\frac{3}{4}$

6) $8\frac{2}{5}$

7) $7\frac{1}{2}$

8) $6\frac{7}{9}$

9) $2\frac{3}{5}$

10) $6\frac{5}{9}$

11) $4\frac{1}{4}$

12) $9\frac{2}{3}$

13) $3\frac{3}{4}$

14) $5\frac{2}{3}$

15) $1\frac{4}{7}$

16) $7\frac{1}{2}$

UNIT 6 ANSWERS

Skill Pr. 3

1) $3\frac{1}{2}$

2) $9\frac{2}{3}$

3) $5\frac{1}{5}$

4) $21\frac{3}{4}$

5) $3\frac{3}{5}$

6) $17\frac{11}{12}$

7) $9\frac{1}{3}$

8) $8\frac{3}{4}$

9) $26\frac{4}{5}$

10) $2\frac{1}{3}$

11) $2\frac{4}{9}$

12) $21\frac{3}{7}$

13) $4\frac{3}{5}$

14) $13\frac{1}{2}$

15) $12\frac{9}{14}$

16) $9\frac{3}{5}$

Formative Test A

1) $25\frac{2}{3}$

2) $5\frac{2}{5}$

3) $7\frac{5}{8}$

4) $5\frac{1}{2}$

5) $14\frac{2}{3}$

6) $5\frac{7}{18}$

7) $25\frac{5}{7}$

8) $3\frac{1}{3}$

9) $13\frac{4}{5}$

10) $8\frac{7}{18}$

Formative Test B

1) $21\frac{1}{2}$

2) $4\frac{7}{10}$

3) $14\frac{5}{6}$

4) $4\frac{5}{14}$

5) $27\frac{5}{6}$

6) $3\frac{2}{3}$

7) $20\frac{7}{10}$

8) $9\frac{1}{3}$

9) $9\frac{3}{8}$

10) $10\frac{3}{10}$

UNIT 7 ANSWERS

Skill Pr. 1

1) $\frac{12}{20}$

2) $\frac{10}{21}$

3) $\frac{3}{8}$

4) $\frac{14}{24}$

5) $\frac{3}{16}$

6) $\frac{21}{36}$

7) $\frac{3}{15}$

8) $\frac{20}{30}$

9) $\frac{3}{40}$

10) $\frac{6}{40}$

11) $\frac{12}{49}$

12) $\frac{1}{25}$

13) $\frac{14}{70}$

14) $\frac{8}{24}$

15) $\frac{4}{81}$

16) $\frac{6}{55}$

Skill Pr. 2

1) $\frac{4}{7}$

2) $\frac{1}{14}$

3) $\frac{7}{40}$

4) $\frac{1}{6}$

5) $\frac{1}{6}$

6) $\frac{1}{4}$

7) $\frac{1}{8}$

8) $\frac{6}{35}$

9) $\frac{8}{15}$

10) $\frac{1}{2}$

11) $\frac{4}{15}$

12) $\frac{2}{15}$

13) $\frac{5}{33}$

14) $\frac{5}{48}$

15) $\frac{16}{63}$

16) $\frac{1}{4}$

UNIT 7 ANSWERS

Skill Pr. 3

1) $\frac{3}{1} \times \frac{2}{9}$

2) $\frac{2}{1} \times \frac{2}{4}$

3) $\frac{6}{1} \times \frac{1}{8}$

4) $\frac{2}{11} \times \frac{4}{1}$

5) $\frac{3}{12} \times \frac{3}{1}$

6) $\frac{5}{1} \times \frac{2}{10}$

7) $\frac{2}{1} \times \frac{3}{7}$

8) $\frac{3}{15} \times \frac{3}{1}$

9) $\frac{1}{4} \times \frac{3}{1}$

10) $\frac{2}{1} \times \frac{2}{6}$

11) $\frac{4}{12} \times \frac{3}{1}$

12) $\frac{6}{1} \times \frac{1}{6}$

13) $\frac{4}{1} \times \frac{2}{15}$

14) $\frac{3}{18} \times \frac{6}{1}$

15) $\frac{11}{60} \times \frac{5}{1}$

16) $\frac{2}{7} \times \frac{3}{1}$

Formative Test A

1) $\frac{6}{7}$

2) $\frac{2}{3}$

3) $\frac{4}{5}$

4) $\frac{2}{15}$

5) $\frac{7}{12}$

6) $\frac{9}{14}$

7) 1

8) $\frac{1}{2}$

9) $\frac{9}{40}$

10) $\frac{3}{4}$

Formative Test B

1) $\frac{2}{11}$

2) $\frac{9}{32}$

3) $\frac{15}{16}$

4) $\frac{3}{4}$

5) $\frac{3}{8}$

6) $\frac{5}{9}$

7) 1

8) $\frac{5}{8}$

9) $\frac{4}{11}$

10) $\frac{6}{35}$

Skill Pr. 1

1) $1 \times 2 \times 3 \times 3$
2) $1 \times 2 \times 3 \times 5$
3) 1×19
4) $1 \times 2 \times 2 \times 2 \times 2$
5) $1 \times 2 \times 2 \times 2 \times 3$
6) 1×23
7) $1 \times 3 \times 3$
8) $1 \times 3 \times 7$
9) $1 \times 2 \times 11$
10) $1 \times 2 \times 2 \times 2$
11) $1 \times 2 \times 2 \times 7$
12) 1×29
13) $1 \times 2 \times 7$
14) 1×11
15) $1 \times 3 \times 5$
16) $1 \times 2 \times 2 \times 3$

UNIT 8 ANSWERS

Skill Pr. 2

1) $\dfrac{1 \times 7}{1 \times 2 \times 2 \times \cancel{2}} \times \dfrac{1 \times \cancel{2}}{1 \times 3}$

2) $\dfrac{1 \times \cancel{2}}{1 \times 5} \times \dfrac{1 \times \cancel{3}}{1 \times \cancel{2} \times 2 \times \cancel{3}}$

3) $\dfrac{1 \times 5}{1 \times 2 \times \cancel{7}} \times \dfrac{1 \times \cancel{7}}{1 \times 3 \times 3}$

4) $\dfrac{1 \times 5}{1 \times 2 \times \cancel{3}} \times \dfrac{1 \times \cancel{3}}{1 \times 2 \times 2}$

5) $\dfrac{1 \times 3}{1 \times 2 \times 2 \times \cancel{2}} \times \dfrac{1 \times \cancel{2}}{1 \times 7}$

6) $\dfrac{1 \times \cancel{2} \times \cancel{2}}{1 \times 3 \times 3} \times \dfrac{1}{1 \times \cancel{2} \times \cancel{2}}$

7) $\dfrac{1 \times 2 \times \cancel{3}}{1 \times \cancel{3} \times \cancel{5}} \times \dfrac{1 \times \cancel{5}}{1 \times 11}$

8) $\dfrac{1 \times \cancel{7}}{1 \times 2 \times 2 \times 3} \times \dfrac{1 \times 5}{1 \times 2 \times \cancel{7}}$

9) $\dfrac{1 \times 5}{1 \times 19} \times \dfrac{1 \times 5}{1 \times 2 \times 3}$

10) $\dfrac{1}{1 \times \cancel{2}} \times \dfrac{1 \times \cancel{2} \times 2 \times 2}{1 \times 17}$

11) $\dfrac{1 \times \cancel{3}}{1 \times 7} \times \dfrac{1 \times 5}{1 \times \cancel{3} \times 3}$

12) $\dfrac{1 \times \cancel{5}}{1 \times 2 \times 3} \times \dfrac{1}{1 \times \cancel{5}}$

13) $\dfrac{1 \times 3 \times 3}{1 \times \cancel{2} \times 7} \times \dfrac{1 \times \cancel{2}}{1 \times 7}$

14) $\dfrac{1 \times 7}{1 \times 2 \times 2 \times \cancel{3}} \times \dfrac{1 \times \cancel{3}}{1 \times 2 \times 5}$

15) $\dfrac{1}{1 \times \cancel{5}} \times \dfrac{1 \times \cancel{5}}{1 \times 7}$

16) $\dfrac{1 \times 3}{1 \times 2 \times \cancel{5}} \times \dfrac{1 \times \cancel{5}}{1 \times 11}$

UNIT 8 ANSWERS

Skill Pr. 3

1) $\dfrac{1\times2\times2}{1\times3\times5}\times\dfrac{1\times5}{1\times2\times2\times3}$

2) $\dfrac{1\times2\times2\times2}{1\times3\times3}\times\dfrac{1\times2\times8}{1\times2\times2\times8}$

3) $\dfrac{1\times5}{1\times7}\times\dfrac{1\times2\times7}{1\times5\times5}$

4) $\dfrac{1\times2}{1\times8}\times\dfrac{1\times8\times3}{1\times2\times2\times2\times2}$

5) $\dfrac{1\times3}{1\times2\times7}\times\dfrac{1\times7}{1\times2\times2\times2}$

6) $\dfrac{1\times2\times13}{1\times2\times8\times5}\times\dfrac{1\times8\times5}{1\times13}$

7) $\dfrac{1\times2\times7}{1\times3\times5}\times\dfrac{1\times5}{1\times7}$

8) $\dfrac{1\times8}{1\times7}\times\dfrac{1\times2\times7}{1\times3\times8\times3}$

9) $\dfrac{1\times5}{1\times2\times13}\times\dfrac{1\times2}{1\times3\times5}$

10) $\dfrac{1\times8\times8}{1\times2\times2\times5}\times\dfrac{1\times2\times2}{1\times8\times8}$

11) $\dfrac{1\times19}{1\times3\times7}\times\dfrac{1\times2\times7}{1\times19}$

12) $\dfrac{1\times2\times2}{1\times7}\times\dfrac{1\times11}{1\times2\times2\times3}$

13) $\dfrac{1\times5}{1\times2\times2\times2\times2}\times\dfrac{1\times2\times2\times2}{1\times3\times5}$

14) $\dfrac{1\times7}{1\times2\times2\times5}\times\dfrac{1\times5}{1\times2\times7}$

15) $\dfrac{1\times5}{1\times2\times3}\times\dfrac{1\times2}{1\times3\times5}$

16) $\dfrac{1\times2\times8}{1\times18}\times\dfrac{1\times18}{1\times2\times8\times3}$

UNIT 8 ANSWERS

Skill Pr. 4

1) $\frac{1}{9}$

2) $\frac{1}{9}$

3) $\frac{2}{5}$

4) $\frac{3}{8}$

5) $\frac{3}{14}$

6) 1

7) $\frac{2}{3}$

8) $\frac{2}{9}$

9) $\frac{1}{39}$

10) $\frac{1}{5}$

11) $\frac{2}{3}$

12) $\frac{11}{21}$

13) $\frac{1}{6}$

14) $\frac{1}{8}$

15) $\frac{1}{9}$

16) $\frac{1}{3}$

Skill Pr. 5

1) $\frac{1}{6}$

2) $\frac{1}{4}$

3) $\frac{1}{4}$

4) $\frac{6}{13}$

5) $\frac{8}{21}$

6) $\frac{5}{6}$

7) $\frac{1}{6}$

8) $\frac{7}{12}$

9) $\frac{3}{5}$

10) $\frac{13}{21}$

11) $\frac{3}{14}$

12) $\frac{2}{5}$

13) $\frac{7}{15}$

14) $\frac{2}{5}$

15) $\frac{2}{5}$

16) $\frac{3}{8}$

Formative Test A

1) $\frac{3}{7}$

2) $\frac{3}{16}$

3) $\frac{1}{3}$

4) $\frac{7}{26}$

5) $\frac{1}{12}$

6) $\frac{1}{7}$

7) $\frac{1}{4}$

8) $\frac{11}{18}$

9) $\frac{1}{4}$

10) $\frac{2}{3}$

Formative Test B

1) $\frac{7}{33}$

2) $\frac{2}{5}$

3) $\frac{3}{7}$

4) $\frac{2}{5}$

5) $\frac{2}{9}$

6) $\frac{1}{16}$

7) $\frac{2}{3}$

8) $\frac{4}{35}$

9) $\frac{1}{6}$

10) $\frac{1}{3}$

UNIT 9 ANSWERS

Skill Pr. 1

1) 4, 8, 12, 16, 20
2) 9, 18, 27, 36, 45
3) 10, 20, 30, 40, 50
4) 11, 22, 33, 44, 55
5) 6, 12, 18, 24, 30
6) 15, 30, 45, 60, 75
7) 17, 34, 51, 68, 85
8) 7, 14, 21, 28, 35
9) 16, 32, 48, 64, 80
10) 3, 6, 9, 12, 15
11) 20, 40, 60, 80, 100
12) 8, 16, 24, 32, 40
13) 13, 26, 39, 52, 65
14) 2, 4, 6, 8, 10
15) 12, 24, 36, 48, 60
16) 25, 50, 75, 100, 125

Skill Pr. 2

1) 12
2) 9
3) 24
4) 30
5) 8
6) 20
7) 30
8) 24
9) 28
10) 48
11) 10
12) 16
13) 42
14) 40
15) 35
16) 72

Formative Test A

1) 48
2) 21
3) 40
4) 18
5) 24
6) 24
7) 16
8) 45
9) 30
10) 48

Formative Test B

1) 6
2) 24
3) 35
4) 36
5) 80
6) 12
7) 15
8) 65
9) 36
10) 18

UNIT 9 ANSWERS

Skill Pr. 3

1) 3 6 9
9
LCM = 9

2) 6 12 18 24
8 16 24
LCM = 24

3) 9 18 27 36
12 24 36
LCM = 36

4) 3 6 9
2 4 6
LCM = 6

5) 4 8 12 16 20 24 28
7 14 21 28
LCM = 28

6) 3 6 9 12 15 18 21 24
8 16 24 32
LCM = 24

7) 5 10 15 20 25 30 35 40 45 50 55 60
12 24 36 48 60
LCM = 60

8) 11 22 33
3 6 9 12 15 18 21 24 27 30 33
LCM = 33

9) 14 28
7 14
LCM = 14

10) 6 12 18 24 30
5 10 15 20 25 30
LCM = 30

UNIT 9 ANSWERS

Skill Pr. 3

11) 8 16
4 8
LCM = 8

15) 18 36
9 18
LCM = 18

12) 12 24 36 48 60
10 20 30 40 50 60
LCM = 60

16) 16 32 48
12 24 36 48
LCM = 48

13) 9 18 27 36 45
5 10 15 20 25 30 35 40 45
LCM = 45

14) 12 24 36 48 60
15 30 45 60
LCM = 60

UNIT 10 ANSWERS

Skill Pr. 1

1) 12
2) 18
3) 15
4) 6
5) 9
6) 14
7) 12
8) 45
9) 21
10) 30
11) 10
12) 6
13) 24
14) 30
15) 24
16) 30

Skill Pr. 2

1) 6
2) 3
3) 2
4) 6
5) 2
6) 6
7) 4
8) 2
9) 3
10) 10
11) 6
12) 2
13) 2
14) 4
15) 4
16) 5

UNIT 10 ANSWERS

Skill Pr. 3

1) $\frac{4}{6}, \frac{5}{6}$

2) $\frac{1}{12}, \frac{6}{12}$

3) $\frac{4}{14}, \frac{5}{14}$

4) $\frac{5}{8}, \frac{6}{8}$

5) $\frac{9}{14}, \frac{6}{14}$

6) $\frac{3}{10}, \frac{8}{10}$

7) $\frac{13}{18}, \frac{15}{18}$

8) $\frac{8}{12}, \frac{7}{12}$

9) $\frac{14}{91}, \frac{39}{91}$

10) $\frac{11}{21}, \frac{12}{21}$

11) $\frac{5}{15}, \frac{13}{15}$

12) $\frac{4}{15}, \frac{6}{15}$

13) $\frac{6}{16}, \frac{3}{16}$

14) $\frac{3}{12}, \frac{11}{12}$

15) $\frac{14}{21}, \frac{1}{21}$

16) $\frac{12}{16}, \frac{13}{16}$

Skill Pr. 4

1) $\frac{15}{24}, \frac{8}{24}$

2) $\frac{5}{15}, \frac{3}{15}$

3) $\frac{6}{8}, \frac{5}{8}$

4) $\frac{15}{40}, \frac{4}{40}$

5) $\frac{5}{10}, \frac{6}{10}$

6) $\frac{15}{20}, \frac{14}{20}$

7) $\frac{12}{24}, \frac{3}{24}$

8) $\frac{18}{60}, \frac{25}{60}$

9) $\frac{10}{12}, \frac{9}{12}$

10) $\frac{6}{21}, \frac{14}{21}$

11) $\frac{52}{60}, \frac{55}{60}$

12) $\frac{3}{9}, \frac{5}{9}$

13) $\frac{17}{21}, \frac{9}{21}$

14) $\frac{3}{18}, \frac{4}{18}$

15) $\frac{9}{36}, \frac{10}{36}$

16) $\frac{20}{90}, \frac{9}{90}$

Formative Test A

1) $\frac{15}{36}, \frac{16}{36}$

2) $\frac{15}{16}, \frac{14}{16}$

3) $\frac{25}{30}, \frac{27}{30}$

4) $\frac{6}{30}, \frac{5}{30}$

5) $\frac{20}{36}, \frac{21}{36}$

6) $\frac{3}{12}, \frac{2}{12}$

7) $\frac{22}{24}, \frac{21}{24}$

8) $\frac{6}{10}, \frac{3}{10}$

9) $\frac{15}{40}, \frac{16}{40}$

10) $\frac{20}{45}, \frac{24}{45}$

Formative Test B

1) $\frac{44}{60}, \frac{45}{60}$

2) $\frac{54}{60}, \frac{35}{60}$

3) $\frac{20}{48}, \frac{27}{48}$

4) $\frac{11}{14}, \frac{10}{14}$

5) $\frac{28}{63}, \frac{39}{63}$

6) $\frac{8}{48}, \frac{15}{48}$

7) $\frac{5}{10}, \frac{8}{10}$

8) $\frac{45}{72}, \frac{28}{72}$

9) $\frac{21}{28}, \frac{18}{28}$

10) $\frac{3}{9}, \frac{2}{9}$

Skill Pr. 1

1) $\dfrac{1}{2} = \dfrac{3}{6}$

   $+\dfrac{1}{3} = \dfrac{2}{6}$

2) $\dfrac{3}{10} = \dfrac{3}{10}$

   $+\dfrac{1}{5} = \dfrac{2}{10}$

3) $\dfrac{1}{3} = \dfrac{3}{9}$

   $+\dfrac{5}{9} = \dfrac{5}{9}$

4) $\dfrac{2}{7} = \dfrac{6}{21}$

   $+\dfrac{2}{3} = \dfrac{14}{21}$

5) $\dfrac{4}{15} = \dfrac{16}{60}$

   $+\dfrac{1}{12} = \dfrac{5}{60}$

6) $\dfrac{2}{5} = \dfrac{12}{30}$

   $+\dfrac{1}{6} = \dfrac{5}{30}$

7) $\dfrac{5}{12} = \dfrac{5}{12}$

   $+\dfrac{1}{4} = \dfrac{3}{12}$

8) $\dfrac{3}{7} = \dfrac{27}{63}$

   $+\dfrac{2}{9} = \dfrac{14}{63}$

9) $\dfrac{6}{13} = \dfrac{12}{26}$

   $+\dfrac{1}{2} = \dfrac{13}{26}$

10) $\dfrac{2}{5} = \dfrac{14}{35}$

    $+\dfrac{3}{7} = \dfrac{15}{35}$

11) $\dfrac{5}{8} = \dfrac{5}{8}$

    $+\dfrac{1}{4} = \dfrac{2}{8}$

12) $\dfrac{4}{9} = \dfrac{16}{36}$

    $+\dfrac{5}{12} = \dfrac{15}{36}$

13) $\dfrac{1}{5} = \dfrac{3}{15}$

    $+\dfrac{1}{3} = \dfrac{5}{15}$

14) $\dfrac{3}{8} = \dfrac{15}{40}$

    $+\dfrac{1}{10} = \dfrac{4}{40}$

15) $\dfrac{5}{6} = \dfrac{10}{12}$

    $+\dfrac{1}{12} = \dfrac{1}{12}$

16) $\dfrac{3}{4} = \dfrac{27}{36}$

    $+\dfrac{1}{9} = \dfrac{4}{36}$

UNIT 11 ANSWERS

Skill Pr. 2

1) $\frac{5}{6}$

2) $\frac{1}{2}$

3) $\frac{8}{9}$

4) $\frac{20}{21}$

5) $\frac{7}{20}$

6) $\frac{17}{30}$

7) $\frac{2}{3}$

8) $\frac{41}{63}$

9) $\frac{25}{26}$

10) $\frac{29}{35}$

11) $\frac{7}{8}$

12) $\frac{31}{36}$

13) $\frac{8}{15}$

14) $\frac{19}{40}$

15) $\frac{11}{12}$

16) $\frac{31}{36}$

Skill Pr. 3

1) $\frac{13}{24}$

2) $\frac{9}{14}$

3) $\frac{5}{6}$

4) $\frac{11}{15}$

5) $\frac{23}{30}$

6) $\frac{7}{8}$

7) $\frac{7}{10}$

8) $\frac{13}{15}$

9) $\frac{17}{18}$

10) $\frac{20}{21}$

11) $\frac{31}{40}$

12) $\frac{3}{5}$

13) $\frac{5}{6}$

14) $\frac{5}{6}$

15) $\frac{11}{16}$

16) $\frac{41}{60}$

Formative Test A

1) $\frac{14}{15}$

2) $\frac{17}{30}$

3) $\frac{11}{12}$

4) $\frac{5}{6}$

5) $\frac{7}{8}$

6) $\frac{19}{21}$

7) $\frac{17}{30}$

8) $\frac{17}{20}$

9) $\frac{5}{9}$

10) $\frac{5}{6}$

Formative Test B

1) $\frac{9}{16}$

2) $\frac{11}{12}$

3) $\frac{49}{60}$

4) $\frac{5}{12}$

5) $\frac{11}{14}$

6) $\frac{9}{10}$

7) $\frac{29}{30}$

8) $\frac{3}{4}$

9) $\frac{13}{18}$

10) $\frac{1}{2}$

UNIT 12 ANSWERS

Skill Pr. 1

1) $\frac{2}{3} = \frac{4}{6}$
   $-\frac{1}{6} = \frac{1}{6}$

2) $\frac{3}{10} = \frac{3}{10}$
   $-\frac{1}{5} = \frac{2}{10}$

3) $\frac{11}{12} = \frac{11}{12}$
   $-\frac{1}{4} = \frac{3}{12}$

4) $\frac{5}{9} = \frac{10}{18}$
   $-\frac{2}{6} = \frac{6}{18}$

5) $\frac{1}{3} = \frac{7}{21}$
   $-\frac{2}{7} = \frac{6}{21}$

6) $\frac{8}{15} = \frac{8}{15}$
   $-\frac{1}{5} = \frac{3}{15}$

7) $\frac{2}{3} = \frac{10}{15}$
   $-\frac{3}{5} = \frac{9}{15}$

8) $\frac{3}{4} = \frac{9}{12}$
   $-\frac{1}{6} = \frac{2}{12}$

9) $\frac{1}{2} = \frac{5}{10}$
   $-\frac{1}{5} = \frac{2}{10}$

10) $\frac{3}{4} = \frac{6}{8}$
    $-\frac{5}{8} = \frac{5}{8}$

11) $\frac{1}{2} = \frac{2}{4}$
    $-\frac{1}{4} = \frac{1}{4}$

12) $\frac{5}{6} = \frac{20}{24}$
    $-\frac{1}{8} = \frac{3}{24}$

13) $\frac{7}{10} = \frac{21}{30}$
    $-\frac{4}{15} = \frac{8}{30}$

14) $\frac{7}{8} = \frac{35}{40}$
    $-\frac{2}{5} = \frac{16}{40}$

15) $\frac{1}{4} = \frac{5}{20}$
    $-\frac{1}{5} = \frac{4}{20}$

16) $\frac{14}{15} = \frac{14}{15}$
    $-\frac{2}{3} = \frac{10}{15}$

UNIT 12 ANSWERS

Skill Pr. 2

1) $\frac{3}{6} = \frac{1}{2}$ 9) $\frac{3}{10}$

2) $\frac{1}{10}$ 10) $\frac{1}{8}$

3) $\frac{8}{12} = \frac{2}{3}$ 11) $\frac{1}{4}$

4) $\frac{4}{18} = \frac{2}{9}$ 12) $\frac{17}{24}$

5) $\frac{1}{21}$ 13) $\frac{13}{30}$

6) $\frac{5}{15} = \frac{1}{3}$ 14) $\frac{19}{40}$

7) $\frac{1}{15}$ 15) $\frac{1}{20}$

8) $\frac{7}{12}$ 16) $\frac{4}{15}$

Skill Pr. 3

1) $\frac{7}{18}$ 9) $\frac{3}{8}$

2) $\frac{1}{10}$ 10) $\frac{1}{18}$

3) $\frac{7}{30}$ 11) $\frac{1}{5}$

4) $\frac{1}{2}$ 12) $\frac{1}{40}$

5) $\frac{3}{10}$ 13) $\frac{1}{6}$

6) $\frac{5}{24}$ 14) $\frac{11}{15}$

7) $\frac{17}{28}$ 15) $\frac{3}{20}$

8) $\frac{1}{15}$ 16) $\frac{1}{16}$

Formative Test A

1) $\frac{1}{6}$ 6) $\frac{5}{16}$

2) $\frac{3}{20}$ 7) $\frac{13}{20}$

3) $\frac{1}{10}$ 8) $\frac{3}{14}$

4) $\frac{7}{12}$ 9) $\frac{17}{30}$

5) $\frac{1}{12}$ 10) $\frac{5}{18}$

Formative Test B

1) $\frac{1}{6}$ 6) $\frac{7}{15}$

2) $\frac{1}{20}$ 7) $\frac{5}{12}$

3) $\frac{8}{21}$ 8) $\frac{1}{8}$

4) $\frac{11}{18}$ 9) $\frac{7}{30}$

5) $\frac{1}{6}$ 10) $\frac{4}{9}$

UNIT 13 ANSWERS

Skill Pr. 1

1) Danny
2) Jennifer
3) Kim
4) JoAnn
5) Wednesday
6) $\frac{1}{2}$ an hour
7) Patti's friend
8) Sunday
9) this year
10) Beth
11) more yellow
12) 1st quiz, $\frac{2}{25}$ missed

Formative Test A

1) 2nd quiz, $\frac{4}{24}$ missed
2) $\frac{1}{12}$
3) Eddie
4) last year
5) Sunday

Formative Test B

1) Wednesday
2) Glenn
3) puppet show
4) Dan
5) Dad

UNIT 14 ANSWERS

Skill Practice 1

1) $\frac{1}{2}$ of a day

2) no gift wrap left

3) $\frac{1}{2}$ yard of string

4) $\frac{3}{8}$ of a gallon

5) $\frac{1}{2}$ of a day

6) $\frac{5}{6}$ of a mile

7) $\frac{5}{6}$ of a cup

8) $\frac{3}{10}$ of a yard

9) $\frac{5}{12}$ of a dozen

10) $\frac{1}{15}$ of a cup

11) $\frac{1}{10}$ of a yard

12) $\frac{4}{5}$ of a pound

Formative Test A

1) $\frac{22}{27}$ of a mile

2) $\frac{29}{18}$ or $1\frac{11}{18}$ inches

3) $\frac{7}{18}$ of his classwork

4) $\frac{3}{5}$ of a pound

5) $\frac{5}{72}$ of a foot

Formative Test B

1) $\frac{17}{12}$ or $1\frac{5}{12}$ inches

2) $\frac{5}{36}$ of a cup

3) $\frac{5}{8}$ of a dozen

4) $\frac{12}{21}$ or $\frac{4}{7}$ of a pound

5) $\frac{1}{8}$ of an hour

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